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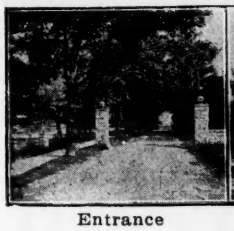
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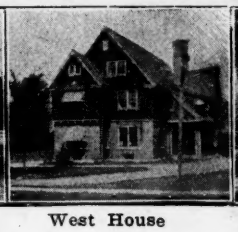
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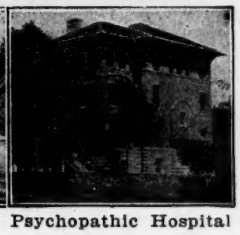
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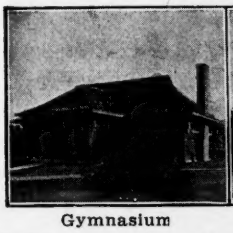
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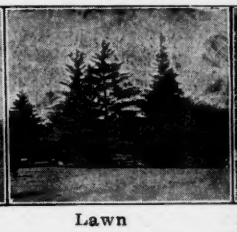
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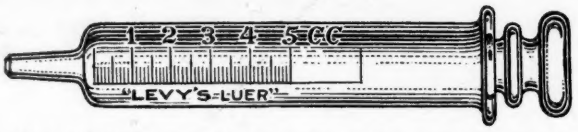

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Vol. XXI GRAND RAPIDS, MICHIGAN, SEPTEMBER, 1922 No. 9

Original Articles

THE PATHOLOGY OF HYPERTHYROIDISM*

LOUIS B. WILSON, M. D.
ROCHESTER, MINN.

Fifteen years ago the use of the term hyperthyrodism to indicate Graves' disease or exophthalmic goiter would have been considered begging the question. Indeed, there are even yet certain physicians, particularly neurologists, who hesitate to accept the thyroid as the primary cause of the symptoms of exophthalmic goiter. But the studies of the internist, the surgeon, the pathologist, the physiologist, and the chemist have now proceeded to such a degree, and on the whole are in such harmony, that it would appear we may safely use the term hyperthyroidism as indicating that the over-activity of the thyroid is at least the direct antecedent, that is the immediate cause of the symptoms of exophthalmic goiter, even if the thyroid itself may be later shown to be only an intermediate link between the symptoms and the primary cause originating in some other organ.

The internist has more definitely differentiated symptomatic goiter from conditions simulating it. The surgeon has demonstrated that the removal of a portion of the thyroid in exophthalmic goiter relieves the symptoms. The pathologist has shown that the morphology of the thryoid in exophthalmic goiter is that of an overfunctioning organ. The physiologist has shown that by causing the thyroid to overfunction some of the symptoms of exophthalmic goiter may be produced in experimental animals. And the chemist has shown that thyroxin, the essential part of the secretion of the thyroid, will produce experimentally the essential symptoms of exophthalmic goiter.

These five groups of workers have approached the question from different viewpoints, but all have discovered data which point to the same conclusion, namely that a certain syndrome consisting essentially of markedly increased basal metabolism, lowered threshold of the nervous system, tachycardia, certain other circulatory disturbances, and an enlarged thyroid, accompanied usually by ocular symptoms, may all be explained directly if not primarily by hyperthyroidism. I assume that the present symposium is for the purpose of restating briefly from the different viewpoints the facts and hypotheses of each.

PATHOLOGIST'S DIFFICULTIES

From the pathologic viewpoint we have to consider first the morphologic evidence of overfunction in the thyroid itself. The greatest difficulty of the pathologist in attempting to associate the histologic conditions in the thyroid with clinical phenomena has been due to the failure of clinicians readily to come to any settled agreement concerning the grouping of various clinical syndromes. On the pathologic side difficulty has also arisen from the fact that aside from tumors and inflammations most of the changes met with in the thyroid merely represent varying degrees of progressive or retrogressive stages in physiologic phenomena and are therefore difficult to evaluate. Pathologists for a long time labored under the difficulty of not having a sufficiently large number of thyroids from accurately diagnosed cases to compare with each other and to study in relation to evidence of exacerbation or reduction of the physiologic processes of the patients from which they came. In making such a study the pathologist must not be satisfied with studying sections from one or two blocks of tissue. He must remember that each follicle of the thyroid is a unit in itself and that his estimate of the working capacity of the entire gland must be based on a study of a sufficiently large number of units to enable him to form a conception of what the gland as a whole is doing. Of course, estimates based on such studies cannot be accurate in a hundred per cent of the cases. They are, however, more accurate than one might be lead to suppose; this is due to the apparently large factor of safety in the human body, that is, its ability apparently to get along with a relatively

*Presented before the Michigan State Medical Society as Part 1 of a Symposium on Hyperthyroidism, June 8, 1922.

small output of thyroxin and to withstand a relatively large output without in either case showing untoward symptoms. It is only when excessive degrees of physiologic changes occur that the body rapidly responds. In the presence of excessive degrees of physiologic depression or exacerbation, theoretically, there should always be corresponding morphologic changes in the gland. If there is a relatively smaller increase of output extending over a long period, especially in glands in which this relatively small increase is associated with the formation of new follicles in adenomas or other nodular types of goiter, the histologic evidence of increased function may be much more difficult to determine. However, notwithstanding all the difficulties arising from inaccuracies of clinical diagnoses, failure of the surgeon accurately to determine the postoperative history of his patients, failure of the pathologist in cases in which operation is performed to get all of the thyroid for examination, difficulty of getting normal thyroids and thyroids from cretins and myxedematous patients for comparison, and the enormous labor of examining several sections from each of a large number of areas in each of a large number of thyroids to make his experience worth while; yet it is true that the experienced pathologist can demonstrate in properly fixed and stained tissues morphologic evidence of overfunction of the thyroid in 90 to 95 per cent of all patients in whom there is sufficient evidence in the history and in results of treatment to warrant a diagnosis of hyperthyroidism. Most of the five or more per cent of error. I believe must be laid to inaccuracy of judgment on the part of clinical, surgeon and pathologist. It is barely possible that a small fraction of one per cent in this margin of error may be due to some unexplained intercurrent factor.

The morphologic changes in the thyroid indicating its increased activity are in brief, hyperemia, parenchymal cell hypertrophy, parenchymal cell hyperplasia, and the formation of new follicles.

HYPEREMIA

The thyroid of exophthalmic goiter is hyperemic. Grossly and histologically there is indisputable evidence of the high vascularity of the gland. It should be noted, however, that this increase in vascularity is not due to increase in the size of a few large vessels, but to a diffuse general increase in the size of the smaller arterioles and capillaries as well as of the larger arteries and veins. Indeed, in many intensely hyperplastic thyroids the larger arteries in the interior of the gland are certainly not increased in diameter in proportion to the increase in diameter of the gland. The smaller arterioles and capillaries, however, are swollen and engorged with blood.

HYPERTROPHY

Hypertrophy of the parenchymal cells, that is, an increase in size of the individual cells, is always present in hyperthyroidism, though it is not always easily demonstrated in adenomatous conditions. Distinction must be made between true cell hypertrophy and cellular edema. Edematous thyroid parenchymal cells are commonly found either in the lax walls of soft cysts or on papilliform projections into the cysts. Occasionally, though very rarely, we must distinguish between true cell hypertrophy and distention of the cell by colloid granules retained within it. True hypertrophy of a parenchymal cell is indubitable evidence that the cell has overworked. It is not an evidence that the cell is ready to begin to work, but that it has already worked. A blacksmith's biceps does not enlarge in preparation for his labor, but as a result of and during his labor. Similarly thyroid parenchymal cells do not increase in size merely as a result of a demand on the part of the tissues for more thyroid secretion, they enlarge only because of the secretion and as they actually do the work of supplying the secretion.

HYPERPLASIA

The term hyperplasia in the thyroid, meaning an increase in the actual number of cells within a given follicle, is sometimes misapplied to simple hypertrophy. In the histologic examination of sections of thyroid, unless the tissue has been fixed and cut so as to preserve the integrity of the entire follicle, it is almost impossible to form a correct estimate of the number of cells to be found even on the walls of a single follicle in a section which includes only one complete layer of parenchymal cells. When the picture is complicated by infoldings of the walls of the follicle it is even more difficult. Anyone, however, who will take the trouble to count the actual number of cells lining the follicular rings constituted each by a 10 microne section through a considerable area of normal thyroid, and then will similarly count the number of cells lining follicular rings in similar sections from an active exophthalmic goiter, will find that there is a very material increase in the actual number of cells in the latter instance. Parenchymal cell hyperplasia is even more unequivocal evidence of hyperfunction than is simple cell hypertrophy. It cannot be mistaken for edema and it indicates greater functional stress.

NEW FOLLICLE FORMATION

New follicles may form even in adult thyroids within circumscribed areas surrounded by definite capsules; they are thus properly desig-

nated adenomas, or they may be indefinitely localized and without the development of a recognizable capsule, in which case the process should be designated adenomatosis. This latter histologic picture may be simulated by the breaking down of the capsule of a true adenoma. But extensive experience in the histologic study of thyroids will lead anyone to conclude that the weight of evidence is strongly in favor of the development of groups of new follicles within adult thyroids without encapsulation. This formation of new follicles apparently may take place from Wolfer's rests in the walls of follicles in which the epithelium has previously become atropic, thus constituting a true regenerative process.

We, then, conceive of the thyroid as a gland which even in the later years of adult life is capable of performing more than a normal amount of work and that as it performs this increased work the working parenchymal cells within a follicle increase in size and may increase in number, a process which requires an increased blood supply. Besides this, new follicles may be formed, lined with epithelium which may or may not develop to an adult functioning stage.

CELLS NOT "SICK"

It seems to me of great importance that we do not consider these progressive changes, that is, hypertrophy and hyperplasia, simple multiplication of follicles or regeneration, as disease processes. In these processes in no sense are the cells "sick" but on the contrary they are more than usually well. They are merely cells that are performing a normal physiologic function, that is growth or secretion, at an unusual stage of development of the individual or to an unusual degree. The hypertrophic or hyperplastic thyroid cell is no more a diseased cell than any other stimulated cell. Theoretically, of course, it is possible that it may overwork so as to degenerate, but it apparently possesses a large factor of safety for itself in the regulatory mechanism which switches off its activity by directing it to the storage of excess colloid within the follicle and thus automatically reducing its capillary blood supply.

It should be remarked, however, that the hypertrophic or hyperplastic thyroid cell of exophthalmic goiter which is apparently only performing a normal function in an excess degree, in reality may be producing a secretory product which is not normal. It is, of course, perfectly possible that the ingredients furnished this small chemical laboratory may be lacking in some essential, and that the molecule of the product as delivered to the tissues may thus lack those atoms which make of it normal thyroxin.

SECRETION INTO CAPILLARIES AND FOLLICLES

It is probable that the active chemical constituent, thyroxin, or an incomplete antecedent of thyroxin is secreted into the capillaries in colloid material of low density, although the experimental proof is not conclusive. Several observers have found colloid, that apparently had been derived from the thyroid, in the vessels and lymphatics of animals after they had undergone certain experiments; but it is difficult to distinguish this from the other colloids of the blood. The substance which fills the capillary ends of parenchymal cells in hyperplastic goiter and has been designated a secretory antecedent, is most probably colloid containing thyroxin. That this colloid is transferred directly into the capillaries, has been questioned because the hyperplastic thyroid contains very little thyroxin. On the other hand, it is difficult to understand how thyroxin, which is insoluble in water, can be passed into the circulation except in adsorption in colloid. We know positively that when colloid is excreted into the follicle, it contains thyroxin in large amounts and that in general the more dense the colloid in follicles the larger the amount of thyroxin therein. The facts that thyroid parenchymal cells lining empty follicles are large and that those lining follicles filled with colloid are greatly reduced in volume would strongly suggest that the bulk of a hypertrophic thyroid cell consists of colloid or colloid antecedents which in the storage phase is excreted into the follicle.

DEGREES OF MORPHOLOGIC CHANGES

The morphologic changes in the thyroid in true exophthalmic goiter may be divided into three general stages:

1. In early exophthalmic goiter, with moderate increase in basal metabolism, usually moderate exophthalmos, and moderate thyroid enlargement, the parenchymal cells show marked hypertrophy and moderate hyperplasia. There is diffuse hypermia throughout the gland.

2. In advanced exophthalmic goiter with a high metabolic rate, usually marked exophthalmos, a well marked nervous syndrome, and usually marked thyroid enlargement, there is advanced parenchymal cell hypertrophy and hyperplasia and little, if any, stored colloid. There is diffuse hypermia throughout the gland.

3. In late exophthalmic goiter with high but sometimes declining metabolic rate, exophthalmos, and a well-marked nervous syndrome; the changes in the gland are similar to those in the earlier stages of exophthalmic goiter, but with beginning of well marked storage of col-

loid. Hypermia is usually materially less than in stages 1 and 2.

The parenchymal changes in the thyroid in true exophthalmic goiter are almost always diffuse, and, therefore, the gland is rarely nodular in its gross appearance except for the occasional occurrence of encapsulated adenomas or adenomatosis.

"TOXIC ADENOMAS"

As pointed out by H. S. Plummer, there is a large group of patients with symptoms clinically distinct from those of true exophthalmic goiter. These symptoms are usually of slow development or, if rapidly developing, they do so only after a long period of nonsymptomatic thyroid enlargement, with basal metabolism increased as much as in exophthalmic goiter, but usually without ocular symptoms and the nervous syndrome peculiar to exophthalmic goiter. This type of hyperthyroidism is so often associated with nodular thyroids that Plummer at first tentatively designated the disease "toxic non-hyperplastic goiter," then "toxic adenoma" and now calls it "hyperfunctioning adenoma."

Since 1908, I have made several attempts at a comparison of specimens from groups of such cases with specimens from groups of other cases without symptoms of hyperthyroidism. Recently, taking the metabolic rate as an indicator of hyperfunctioning thyroid in goiter, I have studied two groups at the extremes of the metabolic series selected in chronologic order of appearance by Dr. Boothby.

Group A. Patients with enlarged nodular thyroids with symptoms of hyperthyroidism, but without exophthalmos and the nervous syndrome peculiar to exophthalmic goiter, and with basal metabolic rates of 20 or more points above normal.

Group B. Patients of approximately the same ages with enlarged nodular thyroids, without symptoms of hyperthyroidism, and with basal metabolic rates within 10 points of normal.

I have studied the thyroids from about 250 patients in each group, or a total of more than 500 thyroids. The results are as follows:

Group A. About 90 per cent of all thyroids in Group A show, in one or more of the areas from which sections were examined, distinct evidence of increased activity of the parenchymal cells. This is indicated by moderate degrees of cell hypertrophy and hyperplasia associated usually with some colloid storage. In many instances there are areas in which the follicles are closely packed with dense colloid, but there are also many areas showing follicles containing little or no colloid and lined with hypertrophic parenchymal cells. If colloid is present it has a distinctly lighter staining reaction than that of thyroids in Group B. In many instances there is considerable parenchymal cell hyperplasia.

Grossly, many of the glands are (1) diffuse colloid goiters without evidence of new follicle formation, but whose nodular character is the result of increased and contracting interlobular connective tissue usually associated with round-cell infiltration indicating chronic inflammation; (2) colloid goiters with definite new follicle formation but without definite capsule formation, adenomatosis, with many of the new follicles lined with parenchymal cells of the functional type which are hypertrophic; or (3) definitely encapsulated areas of new follicle formation, adenomas, with hypertrophic and often hyperplastic parenchymal cells lining follicles which contain little or no stored colloid.

All of these hypertrophic and hyperplastic changes are so moderate in degree and in amount as readily to escape notice except by careful comparison of a large number of thyroids from patients with high metabolic rates slide by slide with a like number of thyroids from patients exhibiting no increase in basal metabolic rates.

In comparing the changes in the thyroids in Group A with the thyroids in a series of typical exophthalmic goiter cases it is found that in general the difference is not only one of degree, but in most instances also of kind. The most advanced parenchymal cell hypertrophy and hyperplasia found in any thyroid in Group A is about the equal of the more moderate degrees of parenchymal cell hypertrophy and hyperplasia in thyroids of the true exophthalmic goiter series; but in most of the thyroids in Group A the histologic picture shows that there has been marked colloid storage in most of the follicles and that now the stored colloid is apparently being taken up by the parenchymal cells and passed into the circulation. The parenchymal cells are apparently not, under high functional pressure, discharging their secretion directly into the vessels as in the case in true exophthalmic goiter, but are first storing it in the follicles. A very common picture in these specimens is the presence in one portion of a large follicle, most of which is filled with dense stored colloid, of small areas of very lightly staining colloid in immediate apposition to hypertrophic or hyperplastic parenchymal cells, while the parenchymal cells lining other portions of the follicle are flattened and atrophic. The chief departure from this picture in thyroids in Group A is in those in which there is very marked formation of new follicles. These, in definitely encapsulated "adenomas," may contain dense stored colloid. Where there is diffuse new follicle formation without definite encapsulation the follicles are not likely to contain colloid, or if any is present it is

feebly staining. The number of the former type of glands is, however, much greater than the latter. From the pathologic evidence alone we are not warranted in concluding that the formation of new follicles is the essential factor in the production of thyroid symptoms, since in almost all glands even in which this is the predominating picture, there are to be found as well many areas which indicate absorption of colloid by reactivated parenchymal cells.

Group B. About 95 per cent of the thyroids in Group B, that is those from patients with nodular goiters, with the clinical diagnosis of adenoma, and without increased basal metabolic rates or other symptoms of hyperthyroidism, did not show in any of the sections from any of the areas examined evidence of even moderate degrees of cell hypertrophy and hyperplasia. The parenchymal cells in follicles of adult type were uniformly flattened or atrophic; in most follicles in adenomas they were of very undeveloped embryonic type. The intra-follicular colloid stained much more densely than that in thyroids in Group A. Grossly, the thyroids from these patients could readily be divided for the most part into three groups closely perallel-ing those of glands from the hyperthyroid group. A few of the specimens consisted of proliferating adenomas, Langhan's Wucherende Struma. It should be noted that the patients from whom these thyroids were removed had been grouped clinically on the basis of nodular goiters. Had the marked nodular character of the thyroids not been recognized clinically no doubt some thyroids would have been found in which the colloid was evenly distributed throughout all the follicles which were lined with atrophic parenchymal cells and the interlobular bands of connective tissue of which would not have been found to be abnormally increased or contracted.

Owing to the work of Boothby and others we may now safely assume that in thyroid disturbances the basal metabolic rate is a fair index of the degree of hypothyroidism and hyperthyrodism. It follows then that the high incidence of moderate parenchymatous cell hypertrophy and hyperplasia in thyroids from the patients in Group A and its abscence from almost all thyroids from patients in Group B, together with the different staining reactions of the colloid in the two groups, can be rationally explained on the basis of a causative relationship. That is, the hypertrophic and hyperplastic parenchymal cells in Group A are apparently secreting a substance which is probably responsible for the symptoms and the increased metabolic rate, and on the other hand no substance in sufficiently large amounts to excite symptoms or increase the metabolic rate apparently is being secreted by the parenchymal cells in the follicles of the thyroids of Group B. This study would seem to place the changes in the thyroid in patients with Plummer's "toxic non-exophthalmic goiter" on a similar though varying basis to that in thyroids from patients with true exophthalmic goiter.

CONCLUSION

In conclusion I wish to remind the members of the Society that though time will not permit of their discussion, we must not forget that whether secondary or primary, there are very marked pathologic changes in other parts of the body besides the thyroid in patients with intense hyperthyroidism. The changes in the cervical sympathetic ganglia, in the cortical brain cells, in the heart muscle, and in a number of the skeletal muscles are uniformly present in patients dying of exophthalmic goiter. The symptoms arising from these changes are very important in diagnosis and in prognosis after surgical or other treatment.

Furthermore, in the present state of our knowledge we are not warranted in assuming that all changes, particularly those of the cervical sympathetic ganglia are necessarily secondary to the changes in the thyroid itself.

HYPERTHYROIDISM FROM THE INTERNIST'S VIEWPOINT

CHARLES LOUIS MIX, M. D.
CHICAGO, ILL.

There is no question at all but that hyperthyroidism or hyperthyreodism, if you wish to call it that, should occupy a very prominent place in our consideration in the district in which we live. We live in a noniodin district, so to speak. We are not favored by mere propinquity to the seashore; we do not get iodin containing material in our environment as easily as it is obtained in other portions of the country.

GEOGRAPHICAL DISTRIBUTION

The geographical distribution of these cases of hyperthyroidism is interesting. It is found, for the most part, in our northern latitudes, and especially about the Great Lakes and in the St. Lawrence River Valley. There is also, as I have found recently when in the northwest, a large area in the State of Washington in which thyroid enlargement is particularly common. It also prevails in Michigan, in Illinois, and Ohio, and in the Great Lakes District. The consideration of this topic is certainly a very necessary one. Naturally one would wonder whether, after all, it is not largely a question of the distribution of iodin.

There was some work done a few years ago which attracted my attention at the time upon

members of the trout family. They found in hatcheries a condition which was regarded as malignant which has been called carcinoma, or by Harvey Gaylord as thyroid sarcoma when he first described it. Harvey Gaylord, who was on the Buffalo Cancer Commission, described an epidemic thyroid condition and came to the conclusion it was a water-borne disease. How, he did not know. He stated in talking to me that on one occasion puppies given this water from these tanks acquired thyroid enlargement and other puppies given boiled water from these tanks did not acquire it. At that time he was of the opinion that iodin was not a factor in the causation of the disease, although at that time I mentioned to him the fact that I was rather of the opinion it was the causative factor.

IODIN CONTENT

Similar investigations were made about ten years ago in certain fish hatcheries in the state of Pennsylvania, where it was definitely proved by Marine that these waters could by being rendered a little more rich in iodin be improved without any undue influence as far as the prevalence of thyroid enlargement in fishes is concerned. In other words, by the addition of iodin to the water in these hatcheries the disease could be prevented. The probabilities are that this particular family of the trout and lake trout are more susceptible to thyroid disease than other varieties of fish, and they are susceptible in cases where the iodin content is unusually low. It is evident from what I have said that we must have iodin in our bodies. The iodin is of value probably in increasing our metabolism rate. It is an item of food, if you wish to call it such, or an item of necessity for us in carrying on some of our most important metabolic actions. It is of a good deal of value, for example, in our brain metabolism, and it is absolutely essential for our thyroid function. If we do not have enough iodin in our bodies, then our thyroids have a measure of conservation, a measure of compensation, exactly like the compensation of the heart in a case of obstruction of the mitral valve, and our thyroids begin to enlarge in their quest for iodin. Hypertrophy and hyperplasia can be looked upon as an effort on the part of nature to get from our blood more iodin in order to store it up for our future use. This iodin is always lacking in cases of hyperplasia. For example, if we take the hyperplastic gland, one finds it contains only about half as much iodin as the normal thyroid. Whenever iodin sinks to a level of less than one-tenth of one per cent, there is apt to appear in the thyroid a hyperplasia. The hyperplasia can be looked upon as a compensatory reaction, and the reason perhaps that young girls rather than young boys are so prone to the disease may be physiological. The old idea which Quincke had as to the explanation for chlorosis in girls and the storage of iron in the liver for maternity purposes may have the same explanation regarding our thyroid glands. For instance, we know as a matter of observation that girls are about four times as susceptible to thyroid enlargement as are boys, and moreover, we find this thyroid enlargement occurring at the time of puberty, and also occurring in an exaggerated way again at the time of pregnancy. It is a possibility, and even more than that the probability, that this is a physiologic response to a maternity need; that the reason for this enlargement at these times is simply a necessity which is being made by the individual for the storing up of more colloid iodin. The iodin is stored up in our thyroids largely in the form of colloid material. It exists in the gland in a double manner, that is, a certain portion of it is elaborated into thyroxin and then is stored for purposes in the colloid material. That is the active form. Another portion of iodin (inactive) is in the cell itself ready for elaboration. The thyroid is very different from most of our ductless glands in this respect. The adrenals, for instance, have no storage mechanism. The only adrenalin you can get out of the adrenals is not large at the time you extract it. That is not true of the thyroid gland. The thyroid is storing from time to time thyroxin for our purposes. I believe personally, although I do not know it is demonstrable as yet, this thyroxin is one of the most important constituents of our bodies. It is a thing which activates a good deal of our brain metabolism and a good deal of our chemical metabolism. The adrenals also have a secretion, as you know, which is the activated secretion of adrenalin which takes care of us perhaps if we follow the theories of Cannon in our periods of stress and strain, in our sudden anxieties which we encounter as individuals, and which we have inherited in the gradual process of evolution through inheritance with environment in the past. The adrenal is the gland of sudden demand. It is the gland which will make a sudden response and carry us through a few moments or an hour of effort, whereas the thyroid works in our most placid existence and serves as the activator of our bodies in which all our metabolism or certain of its metabolism is manifested in these quieter times. The interrelationship of these two glands is well known to every clinician. I believe that the adrenals have an activating influence upon the thyroid and I think the thyroids have an activating influence upon the adrenals. I think the two things are related to one another, and that the two glands have the same general function.

Ordinarily, there is no trouble with the storage of the iodin in the colloid. Ordinarily, everything runs along as it should, but at some time or another something happened to this mechanism. It happens, as we have learned, in two sorts of ways. We learn that from what was alluded to by Dr. Wilson in his paper. We have two groups of cases which we recognize clinically, or taking the thyroid in general we may divide all thyroids into simple thyroids and thyroids which we call hyperthyroidism cases, and then hyperthyroidism cases with exophthalmic goiter. I do not think we need to make any divisions other than those three, and I think the last two differ only in the matter of symptomatology, and that is largely the effect of the intoxication upon the cervical sympathetic, if the cervical sympathetic is very much irritated. Muller's muscle is contracted by the effect upon the cervical sympathetic and the eyes become prominent. The Stellwag sign, von Graefe's sign, the Mobius sign are signs that appear simply because of one added effect. Why we should differentiate hyperthyroidism with exophthalmos from hyperthyroidism without it, I do not know, because in practically all other respects they are very largely related.

INTOXICATIONS

Organisms respond to intoxications in different ways. As Dr. Wilson has said, there may be acute intoxication and chronic intoxication. Certain it is, some of these cases of hyperthyroidism with exophthalmic goiter do come on very abruptly from fright, worry, emotional disturbance, business losses, etc. I saw one in the case of a woman of 78 from an automobile accident in which there was no liability but great anxiety which resulted in a short spastic reaction, so that it was unsafe to stave off the end.

These cases of hyperthyroidism with exophthalmic goiter used to be what we called classic Graves' disease, Basedow's disease, or Parry's disease. So in a way hyperthyroidism twenty years ago was spoken of as exophthalmic goiter without exophthalmos. Twenty years ago we recognized the fact that there were certain cordiac cases without very serious involvement on part of the nervous system; in which the hyperthyroidism was the undoubted factor of causation. As an internist, one who is accustomed to the examination of these cases can always pick them by the cardiac examination, by the dilatation, sometimes by the slight hypertrophy, by the loud ringing heart sounds which are so characteristic, especially the apical first and second and ringing and aortic seconds. These various clinical types which one encounters can all have of them, have one at a time, and be put into one long series.

It would be a ridiculous thing to put a case of extremely mild hyperthyroidism, with perhaps only a few circulatory symptoms, and another an advanced case in the same category which perhaps may result fatally. I used to think a few years ago we were going to find two types of intoxication. I thought thyroxin which Kendall isolated in 1915 might be one of them and our chemists might find another form. This idea I have given up for some time, and after hearing Dr. Wilson's paper this afternoon in which he states practically that the pathologic appearance of hyperthyroidism cases without exophthalmos are very similar to these, I certainly feel more strongly the conviction, after all, that there is but one form of intoxication in these cases.

SYMPTOMATOLOGY

I do not know that it is necessary in a gathering of men physicians and women physicians, such as we have here, to speak about the symptoms of exophthalmic goiter, as it hardly seems as though it would be worth while. We used always to say there were four main symptoms of hyperthyroidism, namely, tachycardia, tremor, exophthalmos, and the enlarged gland. But I think we have got to add to them in all our textbooks a fifth symptom, and that is increased basal metabolism, because I believe the latter is just as much an important and basic phenomenon in the symptomatology of these cases as any one of the other four symptoms. Some of the symptoms which occur in cases of exophthalmic goiter and hyperthyroidism are due to the intoxication of the sympathetic, especially of the spinal sympathetic, to some extent the cerebral sympathetic and cerebral autonomic. Other symptoms undoubtedly affect the myocardium. Those cases in which there is very marked myocarditis, with anasarca and ascites, are cases which illustrate nicely the untoward effects of the intoxication upon the myocardium. As to the tremor of tachycardia, I think its explanation will be found in the pathologic effects upon the skeletal muscles themselves. I do not think it is cerebral in origin. Perhaps the most important effect of this disease is in the phase which we are only beginning to work into, and that is what one might call internal acidosis of the cells themselves. We have found in cases clinically postoperative, after gastroenterostomies, we can control convalescence before vomiting especially by paying a great deal of attention to the presence of acetone and diacetic acid in the urine after operation. At the Mercy Hospital we have every specimen passed to the laboratory and examined for acetone diaetic acid may occur in a postoperative case of acidosis as you get in a case of exophthalmic goiter. These cases of dyspnea, of intense vomiting and di-

arrhea are an expression of an intense acidosis. It is an intracellular acidosis. It is an acidosis due to the intoxication of the cells themselves, and just as in any acidosis, just as in gastrojejunostomy, the effect of proctoclysis and of glucose is most salutary, so also in these cases the same method of procedure to combat acidosis should be followed. The tissues should be loaded with water. Glucose should be administered in as large amounts as the organism needs, and bicarbonate of soda is also of value.

There is some relationship undoubtedly between the excess of thyroxin in elimination and the excess of metabolism and the accumulation of waste products. We do not know very much, when we come down to brass tacks about the scavengers, the individual cells of the waste products. We do not know whether the fire is smoking very much or burning except as the major indications of this process come to our attention. But it is not too much to hope as time goes on we may learn to recognize untoward events early and be able to combat them in a very much better way.

Dr. Wilson's paper was interesting from another point of view because it absolutely coincides with our clinical knowledge; that is to say, this is a gland in which colloid is located. A large colloid goiter is a goiter in which there is not much intoxication going on. It is a gland in which the colloid is being squeezed out, in which the colloid is being put into the circulation, and these are the cases in which intoxication symptoms show, so that there is gland harmony between the gross pathologic appearance as he stated and the symptomatology which one encounters.

In the examination of a case of hyperthyroidism the anamnesis is, of course, of great importance. It is not the whole thing, however. We ought in this day and generation to go a little further than that if we are in any doubt. There are cases in which doubts are reasonably proper. For instance, one occasionally encounters a case of early tuberculosis and is rather at a loss from the heart findings and ringing tones and other phenomena which are encountered to say whether the thing is really a beginning tuberculosis or whether it may not be hyperthyroidism. The same thing is true of the condition we encountered in the army which we called neurocirculatory asthenia, merely a neurasthenic state engrafted on an underlying pathologic process. In these border-line cases we have two tests which are of value to us. One of them is the Goetsch test, and the other the basal metabolism test. I am not one of those who believe the basal metabolism test should be done on every case of exophthalmic goiter or hyperthyroidism just for the purpose of making a diagnosis. It costs $25 to the patient in a great many places at least, and they have not got that much money to pay for the test. It is unnecessary, but it may be vitally necessary in certain borderline cases, and then it should be done. The Goetsch test should never be done in a well defined case of exophthalmic goiter. I saw one case of exophthalmic goiter a few years ago absolutely killed by the zeal of an intern to save the life of the individual by giving some triple chlorid during the last days of the patient's existence. The patient died about 2 o'clock that afternoon as the result of the Goetsch test, which was unwittingly given. Triple chlorid is absolutely contra-indicated in any condition in which hyperthyroidism exists to any great extent, and the Goetsch test should never be done except in border-line cases where it has a place.

METABOLISM

The metabolic test is another test of considerable importance, but it does not have the importance perhaps which is attributed to it. It has no value from the point of view of prognosis. One is not able to tell whether the case is a bad or good one by the metabolic test. These patients may have plus 110 and go through. Neither is it of any value from the point of view of operability of the case. It has certainly no value if the case is a clean cut one. The only value which it has that I can see is in those cases in which it is to be used for diagnostic purposes.

TREATMENT

As to the treatment of these cases of hyperthyroidism, the internist should take charge of these cases for a little while before sending them to the surgeon. I think the internist should have charge of these cases for quite a time. I do not think cases of hyperthyroidism should immediately be passed over to the surgeon for operation. Many of these cases get along very well by the process of gradually cleaning out of their intoxication, probably by processes taking place in their own bodies. You can follow up this process. If we look upon hyperthyrodism mainly as cases of secretion and elimination from the body of thyroxin, it is hypersecretory process. Evidently, anything we can do to arouse hypersecretion is proper treatment. Of these things the most important is rest. We have always insisted on rest in bed in these cases, and we usually insist on it for a long time to come because a great many cases do remarkably well.

I have seen a case of anarsarca and ascites with a circumference of forty-eight inches in a woman, and that woman got well without operation. If it had occurred at the present time instead of a number of years ago, the patient would have been operated on. But in those days, eighteen years ago, we had no

good surgical technic in times when tetany was apt to occur and deaths were very common, because very largely only the cases that were moribund got to the surgeon for operation, and the results were so disastrous that anybody hesitated to recommend surgery. About that time there came into vogue through the suggestion of Leube, a substance put out in Germany consisting of the lymph of thyroidectomized goats. It was put out in this country under the name of thyroidectin. We used thyroidectin in this case and the patient got well. Leube's idea years ago was that plus one of hyperthyroidism added to minus one of hypothyroidism equaled zero, but this fellow's logic was faulty because the excess of thyroxin is not overcome by any deficiency of something else, and when you use thyroidectin you are not making use of minus one to neutralize plus one. The plus one stays there and you are adding blood which does not contain much of anything, a substance which is more or less inert. That went out of vogue. The rest which the woman got, which was enforced upon her because of her ascites and tremendous edema was the thing that ultimately cured her.

Another very important thing is the judicious use of digitalis. I think the surgeons themselves will have to agree that the internist is of some benefit to them, or they themselves have to become temporary internists long enough to give digitalis before operation in operable cases. They, at least, should make use of digitalis to the extent of digitalizing patients before operation. We should have the same privilege as internists. We do not see cases immediately after they are operated on to take care of them in the same manner.

There are also perhaps some beneficial effects to be obtained by the use of sedatives to the sympathetic nervous system. I think bromid should be given to these patients, and the only benefit of quinin hydrobromate is probably the sedative effect which it gives. Sodium bromid has the same sedative effect and it produces the same results. Other therapeutic measures are injection of the glands with hot water or quinin urea.

There remains one other method of treatment which will be considered doubtless by Dr. Crile, namely, the use of X-ray and radium in these cases. Personally, I can only tell you the value of these agents from my standpoint. As an internist I am not particularly pleased with the results which have been obtained in these cases. The only effect the X-ray and radium, so far as I have been able to observe, has is a temporary cessation of the disturbance, with a subsequent recurrence of the trouble. Unless we do away with the pathologic process which is present, the disease is going to go on. It can only be done away with by prolonged rest, by cardiac stimulation, or as I conceive it, with surgical removal. I think the internist, as exemplified by myself, is becoming more and more convinced that the only way these cases are really to be cured is by surgical removed. I rather think the time is going to come when we shall act in regard to the thyroid very much the same as Murphy acted with the appendix. He was a great preacher for the removal of the appendix for prophylactic purposes in the earlier years of his life. That is what I apply in practice. If an individual comes to me under twenty-five years of age, with a simple goiter, that individual is treated with iodin. Usually with the syrup of iodid of iron I can give that individual a good prognosis. These glands are usually the glands of hyperplasia or hypertrophy. These glands are deficient in iodin, and the reason they are large is because the body wants iodin, and if you give iodin to the individual the compensatory hyperplasia ceases. The gland reverts to its normal size and the individual gets well. Occasionally the individual does not, occasionally the patient may have to be taken care of surgically, as in the case of a young girl now under my observation who is to be operated on Saturday morning. She has been under observation since August with hyperplasia, with hyperthyroidism without exophthalmos. That is long enough. It is time for her to have surgical intervention and she will get it Saturday morning. If the case is older than twenty-five years of age—that perhaps is an arbitrary empirical level—the probabilities of benefit from iodin in a simple enlarged gland are not great. The gland will probably remain at the same size. If it is a very large colloid goiter, it is usually a quiescent goiter case. Thyroxin is locked up in the colloid and it is not in the circulation and is not doing damage and may be left alone, but if cosmetic appearance demand it, it should be removed surgically.

There is the adenomatous goiter which should be operated on. When you discover a case, that is the kind of goiter which at any time may suddenly start off a very serious case of hyperthyroidism or of exophthalmic goiter. Then, of course, if the case be one in which you have reason to believe, there is a carcinomatosis or carcinomatous process developing on top of the adenoma, certainly it should be removed, so that I believe as time goes on we are going to become more and more willing to have these glands removed.

I remember a symposium similar to this in which I took part many years ago at the Chicago Medical Society. Dr. McArthur had to

wind up with the surgical treatment, and he was rather apologetic about it, but at the same time stuck up for his profession and said he thought the time would come when surgeons would take a great many of these cases that complained at that early date, which have troubled the internists and surgeons in general, and operate on them. That same complaint was made in regard to appendicitis, and thusly. If we take these cases early, before untoward symptoms of magnitude develop, we shall be able to help them nicely. There are, however, some cases, eliminating exophthalmic goiter, which will probably go on dying as they have in the past. We cannot offer a zero mortality, but we can offer a mortality which very nearly approximates it.

SURGICAL ASPECTS OF HYPERTHYROIDISM

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The Society is fortunate in having chosen such extraordinarily fine papers in which the conclusions of the authors, it seems to me, represent my viewpoint at least, or what I think about the subject now.

I am very glad Dr. Wilson said what he did concerning adenomata. As to Dr. Mix, he has said a great deal of what I intended to have said, and I heartily agree with him. For years I have been following the work of Dr. Mix and have read his various contributions, and they are always sound and reasonable.

Mr. Chairman, I will touch on certain phases of the subject and try not to repeat, so far as I can, what has been presented. Let us start with the idea that essentially, as Dr. Wilson has said, the disease is in the thyroid gland for our purpose. It may have antecedent causes, but for our purpose it is a disease of the thyroid gland.

DIAGNOSIS

Dr. Wilson and Dr. Mix touched on the diagnosis, and I won't touch on any phase except one, and that is to repeat what Dr. Mix said concerning the many phases of increased activity of the thyroid gland. I should like to add to what Dr. Mix has stated this, that I am quite sure the neuro-circulatory asthenic cases we saw in France were cases of another type or degree. If a man, forty-five or fifty years of age, were to undertake an athletic exercise, the result of his going out on the track to compete with a young college boy in running miles, he would have various types of things happen to him. The part of the body that would fail would be dependent on the part of the body which was the weakest link at the time. The thyroid gland increasing in activity might be that portion of the organism which would fail rather than any other part of the organism.

I would like to extend the domain of the diagnosis to include other things than those Dr. Wilson mentioned in the cure of hyperthyroidism. I am perfectly satisfied we do have patients with hyperthyroidism. Of course, the activity of the thyroid has not up to that time taken up the factor of safety so as to make the basal metabolism positive. If you have peritonitis in the acute form, you will have an increased basal metabolic rate, but if you have chronic abscesses of the teeth or a small infection, you will have no increased metabolic rate. In either case it is an infection. In the one case it has not taken up as yet the factors of safety within the organism, so that the basal metabolic rate has not been raised. From this point in our clinic we are satisfied we can detect a group of border-line cases that do not give much change in the basal metabolic rate. As Dr. Mix stated, the basal metabolic rate determination does not help the surgeon in handling his case as to what the prognosis may be, as to whether or not the case is operable, whether to make ligation or to do a thyroidectomy. We have been much disappointed in that. In the diagnosis that one point should be added to what has been said by Dr. Mix. First of all, whether or not you have obvious disease. If you have not, still there is a probability of hyperthyroidism.

The next point to consider is the negative diagnosis, and there comes in the great function of the trained internist. We turn over these cases to a man who is better prepared to make the diagnosis and who is able to exclude syphilis, to exclude neuro-circulatory asthenia, to exclude tuberculosis and infections in various parts of the body. That is a most difficult thing to do on part of the internist, to say negatively this patient has not any of those diseases. If you can exclude all of these things and the patient has a steady increased pulse beat and steady nervousness and other symptoms of mild hyperthyroidism, we operate independently of the basal metabolic rate. We have a goodly group of patients in whom we find the same benefits as we find relatively in other cases of hyperthyroidism.

I was much pleased to have Dr. Mix and Dr. Wilson speak of the similarity and the uniformity of the disease. We do not have the feeling at all that we should have a multiple classification. I think the word hyperthyroidism is a splendid name for the disease, and that we might as well disregard those intermediary groupings.

SURGERY

I would like to speak of several points that I think are interesting from the standpoint of

the surgeon. The first point is, what shall we do with the patient who comes to operation with cyclical vomiting, with rapid pulse rate, increased temperature, and all the symptoms with which we are unfortunately too familiar. Formerly we waited. Now we do not. At the present time we find we are quite satisfied that this represents what Dr. Mix stated, the presence in the patient of an intracellular acidosis, and if you analyze the vomiting you will find it can be pretty well described as representing an expression of intracellular acidosis. In the first place, we find that if you give these patients an enormous amount of water subcutaneously, they will get water in the organism. Five thousand c. c. is better than three thousand c. c. of normal salt solution in twenty-four hours. In the second place, if you digitalize the heart, you have done two things, and have done all you can do in addition to physiologic rest. Bromids help to give that rest. You have all you can do to restore, what? To restore the internal respiration of the cell. When you have done that you will find in a short time—two days is usually the outside limit—cyclical vomiting disappears. If it does not disappear, you should make a second attempt to digitalize the heart and give blood transfusions.

What we call hyperthyroidism as a matter of fact represents only intracellular acidosis and the end results of increased metabolic rate, increased metabolism of the cells, which is choking the cells with their waste products. The thing that dissolves out of the waste product is water and the action of the digitalis is merely to increase the force of the pump, the circulation, to give oxygen to the cells, to increase the volume of circulation through the central organs. That is the purpose of digitalis, and that is how it helps in our opinion. Then blood transfusion gives greater capacity to the volume of blood and greater capacity to carry oxygen to the cell. The cell being oxygenized and the water rectifying itself in a short time, we immediately operate. Since using this simple formula we have scarcely ever seen any patient who is required to remain in the hospital more than an average of three days for all cases of exophthalmic goiter or hyperthyroidism before operation. The average is about three days. Occasionally it may go as long as six or seven days.

The next point I wish to discuss is the question of the conduct of the operation itself. I will only give you a general outline. If what we have said is true, and what Dr. Mix has said is true, the disease as we see it is an intracellular process. If that is true, then what we should do is to operate upon these patients and sustain and maintain them in a state of inactivity during operation, giving large amounts of water and oxygen. If you can do that and do a ligation or a thyroidectomy, how can your patient die? He cannot do that if you can maintain that. He cannot die except from pneumonia or something that is not directly connected with the operation itself. As a matter of fact, that may sound like an optimistic statement, but in our own series of operations, of ligations and thyroidectomies, we have a mortality rate under 1 per cent, and of the 372 operations that have been performed, we have only had the last death recently. This compares favorably with any other type of operation we have performed. In the cases the moment you take out thyroid tissue, you have taken it out for the patient's benefit and you at once balance the benefit against the harm you have done. In all operations you are bound to have a certain amount of harm. The greatest good to the patient will come in the next twelve or twenty-four hours which will balance against the harm of the operation. In our clinic, and many other surgeons are doing the same, we believe that the internal respiration should be maintained during operation unimpaired. This means you cannot give inhalation anesthetics, because they interfere with internal respiration. The only anesthetic you can use is a light stage of gas and oxygen which is called analgesia. Furthermore, we believe you cannot take a patient to the operating room for operation because in the process of taking them there you may have a death as we have had in times past. In taking the patient to the operating room he may die as a result of his metabolism. The metabolic rate may be changed materially by the prospect of an operation, and that may be sufficient to kill the patient. Since that time we have just turned the whole problem right around. We do all ligations in patient's beds in their rooms. We can do it easily. It is not troublesome.

When a patient returns for thyroidectomy, if that patient is a bad risk, we always do thyroidectomy in the patient's room in bed with analgesia plus local anesthesia. We may find it necessary to leave the wound wide open. Why do we do it? Because as has been stated before in the case of hyperthyroidism an essential part of the disease itself is that the nervous system is sensitized to all kinds of stimuli. Many a stimulus that goes into the patient's sensorium after operation is the stimulus of pain after operation from the inner side of the muscles. Much more important as a stimulus which may overwhelm the patient is the stimulus of the ordinary wound secretion which is absorbed. The ordinary wound secretion in an ordinary patient under an operation for hyperthyroidism or an abdo-

minal operation, we may say, may produce a temperature of one-half degree or one degree as a normal reaction; in other words, so-called aseptic wound fever. If you take a patient with hyperthyroidism who is sensitized to all stimuli, including stimuli of wound secretion. If that is multiplied by four, you have four degrees of temperature after operation; if multiplied by six you have six degrees; if multiplied by seven or by eight, you have eight degrees of rise in temperature by virtue of the drive made by the wound secretion itself—the obsorption. When we came to this point and had these high temperatures, we packed the patient in ice. If we do the operation in the patient's room in bed without moving the patient on her pillow, it is done under local anesthesia plus analgesia. By leaving the wound wide open there has been no necessity for the other treatment because we do not see the very high temperature. The second day or the next day, if the wound is closed, it is closed in bed under analgesia and local anesthesia. I wish to point out, however, that it is a mistake to call these cases hyperthyroidism. That is not what the trouble was. The trouble was what Dr. Mix said it was. In that state all you need to do to save the patient is to pack the patient in ice, and if you take the temperature continually, you will see a spectacular fall in temperature from 106 to 101 and to 99 in two hours. Before we noted how rapidly it took place, we drove the temperature below normal; it was subnormal, and we had to use measures to bring the patient back to the normal state again. These patients may be delirious at the time we start the cold; they come out of the delirium much the same as they do from sunstroke.

TECHNIC

I will not take up the time of the Society with a consideration of the technical part. However, I would like to mention two or three points regarding the technical part. First, it is very important in the hyperplastic cases that Dr. Wilson described to take away enough of the thyroid. I used to make the mistake of removing too much thyroid. Second, it is very important to take care of whatever thyroid you do leave by covering it from top to bottom over the parathyroid and the recurrent nerve, otherwise you may get a bilateral abductor paralysis, then you have a most unfortunate condition. In a case I operated on not long ago, I had considerable difficulty in overcoming that unfortunate accident. I never saw the parathyroids or recurrent nerve. If you operate in such a way on the thyroid you ought to see the parathyroids and see also the recurrent nerve, then you will not hurt them. It means you have left them in the field of repair and with a hard scar you may have permanent abductor paralysis occasionally.

There is one point I would like to discuss which I regard of the utmost importance, and that is, it is important for the physician, the patient and the surgeon to get together in consultation before operation is done with the following point of view: that patient ought to be searched to see what forces there are at work in the patient's external or internal environment that will cause a continuation of the drive against the patient. Has the patient chronic tonsillitis? If a focal infection is present, it should be removed. It is very important for the physician in charge of the patient and the surgeon at the same time, if it can be done, to come to an understanding on another problem, an agreement on it, and that is a period of three months, is the golden opportunity for the patient to make a distinctive reorganization within himself by his organism. The trouble is these patients feel so greatly improved, feel so sure of themselves that they are well, that whatever you may have said to them in the way of caution will be forgotten. They will return to their employment and will take up the ordinary normal life and may later return with a partial recrudescence of the disease. In other words, I have been so impressed with the advantage of obtaining the best end results, that I have spent most of my time impressing patients before operation what is valuable for them to do. I write it down, and while some of the patients agree to do what I tell them, they have not fully followed this plan.

I would like to present a little different viewpoint from that of Dr. Mix, and that is this: I found in the early days, and not so long ago, the process of waiting to see if a patient is getting better before doing an operation was a good thing, but I no longer believe that to be feasible. Today the thing to do, when you make a diagnosis of hyperthyroidism, and the earlier the better, is to immediately, as soon as convenient, remove the excessive amount of thyroid tissue, and there is where the physician comes in. The physician, in spite of dealing with the patient before hand, will do so much more for his benefit without the first handicap of the thyroid taken out of his way, and then, too, for the patient all he would have done for him or her if there had been no operation. Many patients have been cured, but those not cured have sacrificed the expectancy of their natural life after perhaps myocardial damage, more or less permanent, had taken place, after the nervous system had been more or less damaged permanently, and when they came to operation you find you have lost something.

The analogy of Dr. Mix of acute appendicitis and hyperthyroidism is a good one. As Dr. Murphy long ago spoke about appendicitis, so I believe in hyperthyroidism cases we will do better if we will only recognize the fact that if the physician can save 50 per cent of patients by rest cure, if he can do that, he will certainly cure practically all of them by having operation first, then the same thing would have done anyhow. As I see it now, timely surgery in the early stage in a hospital to remove the gland is the thing, and at the present time, if you have an early diagnosis and early operation, there will be almost no mortality rate. The patient goes right back into the hands of the physician, and the physician ought to keep that man or woman closely in hand for a period of a year or two to govern his or her life. Govern it how? By increasing largely the amount of sleep; getting up in the morning at 10 o'clock for a month; have a light breakfast in bed, and be about for an hour or two; have a light luncheon, and then lie down from 2 to 4 o'clock; then have supper, go to bed at 9, and repeat that for one month. Avoid all meat diets, as these increase metabolism, and if you put them on a milk or vegetable diet, it is the thing to do. In the first month it is well to put the patient in a nursery. I think it is a mistake that we have not taught these patients to play their part of the game for the first month, as a certain reorganization goes on in the patient. This is our great chance to cure patients the first month, and in the second month make a little modification, and in the third month they can go back to their work.

RADIATION THERAPY OF HYPERTHYROIDISM

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Radiation therapy is coming to play a more and more important part in the management of toxic goiters. A decade ago the number of cases submitted to this form of treatment was relatively small, the great majority of surgeons preferring to treat their cases by radical operation upon the offending gland. Gradually, however, the literature of the subject has accumulated until we now have a large basis of successful experience from which to draw conclusions regarding the value of radiation therapy in hyperthyroidism.

For the non-toxic effections of the thyroid gland, no value is now attached to radiation treatment. Simple, colloidal, cystic or calcareous goiters should be excluded from radiation treatment, resorting to surgery in such cases as demand it. Occasionally one finds a case of non-toxic adenoma where radiation treatment will diminish the size of the gland; but in view of the danger of still further reducing the basal metabolism in a case where the rate is already normal or somewhat below, it is probably not wise to employ the rays in any case where there is not a definite hyperthyroidism. An exception to this rule, of course, is a malignant goiter which should first be subjected to a heavy dose of radiation, then removed, and the radiation treatment continued at once after recovery from the operation.

The factors of greatest importance in following the course of hyperthyroid cases are the basal metabolic rate, and the pulse and weight curves, just as in pneumonia we depend upon the curves of the pulse, temperature and respiration. In the Battle Creek Sanitarium clinical work, it is the routine procedure to estimate the basal metabolic rate on all cases of suspected hyperthyroidism, and to continue the metabolic observations at frequent intervals throughout the duration of the treatment, no matter what form of therapy is recommended for the individual case, the basal metabolic rate being considered the best index of toxicity available. Blood sugar curves, adrenalin tests and differential blood counts are useful and interesting, but the basal metabolism is considered of greatest importance.

Large series of published results are not lacking. J. F. Fischer of Copenhagen has recently published his results in 490 cases of Graves' disease treated with roentgen rays. Holmer, Aub and Means of Boston have recorded 369 cases treated up to the fall of 1921. Baetjer and Waters have reported more than 100 cases under radiation treatment. Loucks of Detroit has a long series with radium management. Similarly Heyerdahl has reported on the radium therapy of toxic goiters in Norway, Nordentofft and Blume have recorded a series of 100 cases of Graves' disease treated with roentgen rays. Especially in Germany, where the earlier suggestions to employ roentgen therapy for hyperthyroidism were received with skepticism, the use of radiation therapy for toxic goiters is rapidly gaining ground. Negelschmidt has recently voiced the opinion that no case of Graves' disease should be operated upon until after a careful and thorough trial of radium therapy. In Canada, Bingham and Richards have recorded their results in 300 cases of toxic goiter treated by roentgenization. Aikens has similarly treated a large series of cases with radium.

In the Department of Radiotherapy at the Battle Creek Sanitarium, in association with the director of the department, Dr. James T. Case, we have records of 130 cases of hyper-

thyroidism treated since the introduction of the routine estimation of the basal metabolic rate. It should be made clear that in none of these cases was the radiation therapy the only treatment employed. Rest, modification of the diet, sedative measures of various kinds, as well as careful attention to the problem of intestinal stasis were carried out; the results obtained therefore were not altogether attributable to radiotherapy. The earlier cases were not submitted to radiation therapy until after apparent failure of other non-surgical measures; latterly, however, the radiation therapy has come to be a routine part of the management of toxic goiter cases.

The majority of our cases occurred in women between the ages of thirty and forty-five. About fifteen per cent of our patients were men. The average metabolism test before treatment was plus 38; after treatment plus 15. The highest metabolic rate observed before treatment was plus 110; the highest rate after treatment was plus 38. The lowest rate after treatment was minus 11. The greatest drop in metabolic rate in any case treated was from plus 110 to plus 26 a diminution of more than 80 points. The average weight before treatment was 116½ pounds; after treatment 127 pounds or an average gain of 10½ pounds per patient. The average pulse rate before treatment was 98; after treatment 83. The greatest drop in pulse rate in a given case was from 152 before treatment to 85 after treatment. The least drop in pulse rate in a given case was from 76 before treatment to 60 afterwards.

TECHNIC

Roentgen irradiation is a powerful therapeutic agent. It is possible that in dealing with highly toxic goiters, we may bring about a dangerous exacerbation of symptoms quite analogous to that produced by an untimely operation. For many years, therefore, it has been the custom in the clinic of the Battle Creek Sanitarium to administer the radiation treatment in relatively small dosage repeated at the usual three-week intervals. With the introduction of the new penetrating radiation method employing voltages of 200,000 or more, Dr. Case and I tried out a series with massive dosage of highly filtered rays. Our experience has taught us that the ultra-penetrating radiation of the new high voltage instruments is not required for the successful treatment of hyperthyroidism. In the management of malignant disease of the thyroid gland, it is highly desirable to avail one's self of the new highly penetrating radiation with the powerful apparatus in the effort to deliver to all parts of the gland at one sitting a dose which will be lethal for the malignant tissues. This is accomplished, however, at the cost of producing a marked disagreeable dryness of the throat and mouth, discomfort of considerable grade involving the larnyx and esophagus, and in many cases a very unpleasant radiation sickness lasting from twelve to forty-eight hours. In the treatment of benign lesions of the thyroid gland it is quite unnecessary to produce these unpleasant symptoms. Greatest care must be exercised to avoid any visible reaction on the skin following treatment in benign cases, for the skin of the neck, especially in hyperthyroidism, is unusually susceptible to radiation, and an erythema is apt to be followed, perhaps after an interval of a year or more, by a disconcerting telangiectasis.

Ledoux in 1912 recommended exposure of the thymus gland in the radiation treatment of exophthalmic goiter. This suggestion was repeated by Stoerk of Vienna in 1913 and by W. S. Halsted of Baltimore in 1914. Baetjer and Waters found in a series of 99 patients with hyperthyroidism treatment only over the thymus gland that a considerable number were entirely relieved of their subjective symptoms, although some of them did not lose the characteristic objective signs of their disease. We have therefore followed the plan of plotting three areas for treatment; one area over each lobe of the thyroid gland, carefully adapting the area to the actual size of the tumor; and one area over the thymus region below the clavicles. Each area receives 28 to 34 milliampere minutes at a target skin distance of twelve inches, with a peak voltage of 125,000 to 130,000, through a filter of five millimeters of aluminum plus a thickness of sole leather. This treatment is repeated at three-week intervals.

EFFECTS OF TREATMENT

In two to four weeks the patient's nervousness should so far have been reduced that the application of the second series of treatment is eagerly anticipated both by the patient and the physician. The drop in metabolic rate should be definite. A simultaneous and corresponding diminution in the pulse rate is observed. Neither the pulse nor the metabolic rate should be expected to maintain a normal level before the expiration of three to six months. Reduction of the size of the neck is usually noted to slight degree; but we should seek less to reduce the volume of the gland and the protrusion of the eyes than to lessen the circulatory and metabolic disturbances. The roentgen rays act especially upon the secretory function of the gland rather than upon its anatomical state. The influence of radiation upon the ductless glands of the body is well recognized. The effect on the testicle and the ovary is common knowledge. There is a long

list of contributions to the literature concerning the effects of radiation on the thymus and the thyroid. Rave's report is the only one which denies the existence of histologic evidence of the profound effect of radiation on the glandular elements of the thyroid. Our therapeutic aim should be to control the activity of the thyroid secreting elements rather than to abolish it. Proper technic will permit the symptomatic cure of the majority of our cases, say four-fifths. In some it may be required to suppress the activity of the gland to such a degree that a myxedematous state results before the symptoms are relieved. It is here that the estimation of the basal metabolic rate as a routine control procedure enables us to suspend our radiation therapy when the rate is approaching normal, for it is our observation that the rate continues to drop for some time after the cessation of the radiation treatment.

It is possible to accomplish with radium therapy precisely the same clinical results as with roentgentherapy, provided the technic of application is properly managed. The radiotherapist must understand the basic principles governing filtration, dosage, the effect of distance, etc. Under certain conditions there is a distinct preference for the use of radium, as, for instance, with highly neurotic patients, whose unstable nervous systems might be further upset by a visit to the X-ray room even with the smooth running, nearly noisless apparatus of today. In such cases, ice-bags to the neck will in all probability be indicated, and one can very easily substitute a radium applicator for one of the ice bags, without the patient's knowledge.

An application of a small pack containing 100 milligrams of radium element, filtered through 0.5 millimeter of silver, one millimeter of brass, and six centimeters of felt, may be left in place six to eight hours without visible skin reaction, but with definite depressant influence upon the gland.

In general we prefer the roentgen application as being much more economically given.

OBJECTIONS TO RADIATION TREATMENT

The following are among the reasons advanced for preferring surgical to radiation treatment for hyperthyroidism in cases not complicated by tumors with pressure or other disturbing symptoms:

1. *Danger of Skin Damage.* This is not a serious danger, especially if one employs a voltage as high as 120,000 or more, in the divided doses mentioned under the head of "Technic." It is not necessary to produce an over-reaction of the skin; excellent therapeutic results are obtained without producing any skin action whatever, and such reaction should be avoided in all except cases of malignant struma. Atrophy of the skin and telangieiases may follow erythema doses.

2. *Danger of Damage to An Already Affected Heart.* It is sometimes argued that the delay attending the slower reduction of the toxicity by the radiation method materially increased the danger of further damage to the heart. Possibly this is true, but it is also proper to question whether the added stress placed upon the heart by operation may not be equivalent to the prolongation of danger to the heart in the interval of four to fifteen weeks of treatment, during which time the toxicity is steadily decreasing under the effects of the rays.

3. *Myxedema.* It is true that this also may occur under X-ray treatment if it is too intense or too prolonged. It has not occurred in any of our cases except possibly one, where the final metabolic rate was minus 11. It is possible that in later years hypothyroidism may result from the continued contraction of connective tissue formed within the gland as the result of the radiation. It is, of course, to be remembered that myxedema supervenes in the ordinary course in a fair number of cases of hyperthyroidism regardless of the type of treatment, surgical, medical or radiological, and even in cases which have received no treatment at all. It is remarkable that in one case of our series treated by Dr. Case over a period of eighteen months beginning more than seven years ago (case of carcinoma of the thyroid) the patient is still alive and well, and not hypothyroid.

4. *Difficulty of Operation After Irradiation.* This is one of the pet objections to the radiation treatment of goiter. In our experience it is seldom indeed that any special difficulty in operative removal of a gland previously subjected to radiation treatment is mentioned by the surgeons. Von Eiselsberg was probably the first to raise this objection to non-surgical treatment. Numerous communications by competent authority tends to show that the occurrence of adhesions between the capsule and the surrounding tissue is not more frequent in cases which have been radiated than in cases where radiation treatment has not been administered. Haberer, Henle and Ropke are prominent among the surgeons who deny the occurrence of post-irradiation adhesions. In our experience the administration of four or five series of roentgen treatments within a period of twelve to eighteen weeks, especially with the higher voltage treatment, cannot perceptibly increase the difficulty of operation; on the other hand, in cases where the radiation treatment has been persisted in for one and a half to two years, definitely increased difficulty in operating is sometimes encoun-

tered. No case should be treated with the rays for a period long enough to produce adhesions sufficient to render surgery more difficult.

5. *Death.* There are reported in the literature only four deaths occurring shortly after the administration of radiotherapy, and therefore possibly due to the radiation. The manner of death in these patients was similar to that which comes in many cases of severe hyperthyroidism, not submitted to radiation, the patients dying under an increasing hyperthyroidism. There were only four deaths recorded in more than five thousand cases referred to in the literature, and in none of the four was there more than circumstantial evidence that the radiation had any direct influence in producing the unfortunate result.

PROGNOSIS

The prognosis depends in large measure on the social status of the patient. Those belonging to the hard-working classes do well while in the hospital or under the constant supervision of a physician; but when they return to their homes they soon have to meet the exigencies of every day life in their usual surroundings, and they are soon led into marked interference with the plan of treatment necessary for completion of the cure. On the other hand, that class of patients socially and financially able to comply with the physician's instructions with reference to rest, quiet, medical and physiotherapeutic treatment, usually do well. Treatment is usually instituted earlier in the disease.

Even in the more severe cases of Graves' disease, roentgen treatment is not only justifiable but indicated, carried out with the precautions required by the conditions of the individual patient. In case of resistance to the radiation treatment, it is not profitable to continue the radiation therapy longer than two to four months. Rather the patient should be referred to the surgical division for operative treatment, perhaps with a continuance of the radiation treatment in smaller doses after the operation. As before stated, there is very little evidence, except the declaration of more or less prejudiced surgeons, that the ray treatment will in the least degree increase the danger or difficulty of the surgical procedure. On the contrary the pre-operative radiation treatment will unquestionably materially diminish the surgical risk, especially the risk of thymic death.

We recognize that while the basal metabolic rate is probably the best available index of toxicity, still the other clinical features of the case must be considered in evaluating the effect of any treatment. In a general way, it may be considered that in patients with pressure symptoms or other disturbance of a nature requiring operative treatment, it is risky to operate when the metabolic rate is above 50, and it is safer to wait until it is reduced to plus 40 if possible. We rarely have difficulty to reducing the metabolic rate to the figures named with only one or two series of radiation treatment.

In cases with imminent danger of further damaging an already impaired heart, it is our feeling that the surgical operation should be done as soon as possible, but that in the great majority of cases requiring surgery, it will be profitable to delay until the preoperative treatment can be given. Only where the postponement of surgical interference is accompanied by serious danger should the radiation treatment be considered as contraindicated in the treatment of hyperthyroidism.

THE PREVENTION OF SIMPLE GOITER IN MAN

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CLEVELAND, O.

I was somewhat fearful before I got to my part in this program that it would be dull, but I am pretty sure that a cheerful message on the prevention of goiter is apropos right now.

I am not going into the details of the goiter districts throughout the world. You know the endemic districts and the social and economic importance of goiter as well as I do. When I use the term goiter, I mean simple or endemic goiter, and I do not refer to hyperthyroidism or exophthalmic goiter, to Graves' disease or to Basedow's disease.

Before you can appreciate the fundamental principles underlying prevention; before you can see why we went to Akron to try to prevent goiter in the public schools, we must review briefly the bio-chemistry and physiology of the thyroid gland.

BIO-CHEMISTRY

Away back in the sixteenth century Paracelsus spoke about cretinism and goiter. Two centuries after that a French physician said that goiter was one of the steps on the road to cretinism. As early as 1835 or 1825 we have Parry and Graves and Basedow's description of the clinical complex we have heard of this afternoon, but not a single one of them interpreted their findings as in any way related to the function of the thyroid. No one has ever mentioned the function of the thyroid gland until Sir William Gull gave his description of myxedema in 1874.

In 1896, Bowman discovered iodin was a normal constituent of the thyroid gland. Since that time our knowledge of the chemistry, of

biological reactions, of the histology and physiology of the thyroid has gone on very rapidly.

So far as iodin is concerned, it was used by the Greeks when they gave the burnt sea sponges long ago. In 1820, Dr. Quendy used iodin purposely for goiter, not knowing why, and it was used for seventy-five years before scientists accidentally discovered that iodin was a normal constituent of the thyroid gland. I call your attention to that to show the general results of the thyroid in the last twenty-five years. About 1902 Bowman and Ruse found that iodin was stored up in the colloid, pent up with the globulin.

In 1907, Dr. Marine pointed out that the normal function of the thyroid gland depended absolutely on iodin, and that iodin was the chief or important element in the secretion of the thyroid gland.

In 1915, Dr. Kendall of the Mayo Clinic had gotten out in crystalline form the thyroid hormone, and he finds that iodin is the important element, while you can substitute any of the allergies, chlorin or bromin for the iodin in this particular chemical compound, and it makes a good chemical compound, but in so doing you have absolutely destroyed the biologic action of the thyroid secretion.

Just to give you a summary, about 1907 Marine and Lenhardt showed by their experiments that iodin was necessary for normal thyroid function. Further, they pointed out that just as soon as the iodin falls below one-tenth of one per cent of the normal gland tissue, hyperplasia begins. I want to make that definite as it was referred to once or twice this afternoon. We do know that just as soon as the thyroid gland runs out of iodin, it increases hyperplasia and hypertrophy begins right there. You may have all the work you can possibly imagine, but you can have enough secretion to kill any one of them. Experimentally you cannot produce hyperplasia in animals unless you have removed practically all the thyroid gland. In dogs you have to remove more than three-quarters of the thyroid gland and in other animals proportionally, but experimentally you cannot produce hyperplasia of the thyroid or goiter if it is kept saturated with iodin.

In order to give you a brief summary of the etiology of goiter as it has been thought of in the last few years, Dr. Robert McGarrison in his work in India has been telling us that goiter is produced by a bacterium. Again, Shepherd in making his survey in Canada as late as 1919 insists that goiter is a contagious disease and a water-borne disease, and in considering the bacterium he makes practical comparison with the typhoid bacillus. The work that is being done by the research workers of this country tends to put goiter in the deficiency diseases. I want to emphasize that from the standpoint of correlating it with the deficiency diseases, for the pediatricians meet it under other conditions. We frequently think, for instance, of chlorosis, and any one would immediately think of a lack of iron. There is no need to waste time in mentioning why there is a lack of iron; but the red blood cell and hemoglobin are well nourished because of a lack of iron.

In rickets there certainly is an abnormal calcium balance and you have the deficiency diseases. We do not know just exactly what they are due to, but deficiency diseases are due to a lack of certain vitamins. These are scurvy, pelyneuritis, and so on. I want to put endemic or simple goiter, or adolescent goiter, in the same category. The thyroid is starving for iodin.

To give you a brief summary of all of the work that has been done in Akron, I will say that it has been published several times, and I am just going to give the figures in round numbers here.

The most recent publication is in the American Journal of the Medical Sciences. I will give you a summary to show you why we went down to Akron to start a prevention of goiter. In our animal experimental work it was shown definitely that iodin was essential for normal thyroid activity. From a thoroughly biochemical standpoint, iodin is necessary for physiologic action, the thyroxin or thyroid hormone.

From a histological point of view, glandular hyperplasia of the thyroid is due absolutely to a deficiency of iodin. From a physiological standpoint, the thyroid extract is active in proportion to the iodin content. These facts together with the results we have obtained in Akron on the prevention of goiter show that by keeping the thyroid saturated with iodin the theory of McGarrison, Shepherd and others of a bacterium as the cause is untenable. We feel absolutely sure that the cause of goiter is a deficiency of iodin in the organism.

Up to 1916, they had been carrying out the prevention of goiter in the maternity clinic at Lakeside Hospital for five or six years and practicing the treatment of goiter with iodin in the Lakeside Dispensary regularly at the goiter clinic for over ten years. Quite a few physicians in connection with the Western Reserve Medical School had been preventing goiter in pregnancy and at puberty. Most of the men connected with the Western Reserve Medical School said it was no longer a question but a proven fact. They feel, and we are teaching it, that goiter is the easiest known disease to prevent. But when we started in

our work to carry it out as a public health measure we met with considerable opposition. A great many of the physicians of Akron prophesied there would be an outbreak of hyperthyroidism. Others said there would be an outbreak of iodid rash. Both of these conditions were looked for, and the sum total of ill effects of all our work in Akron of more than 10,000 cases was a slight iodid rash in 11 cases; in 6 cases this rash was so slight that they did not stop taking phophylaxis, while 5 of them were sufficiently troublesome to discontinue treatment.

PREVENTION

I went to Akron to carry out the work in the public school, because being acquainted with the public school system, I knew they had considerable goiter in Akron. They had girls there of the adolescent age with many goiters, and the most important reason was that we could start a campaign of education that would be carried out and be worth more from the standpoint of good accomplished, than the treatment of the goiter itself.

We began with the girls of about the fifth grade age up to the eleventh, and carried it from the twelfth grade on to the high school. This was taken up as a public health measure. The matter was put up to the Summit County Medical Society, and we were to have six months to make a trial of the treatment. The school board was sent a notice to the effect that we might do some good, but the treatment could do no harm, and the members of the school board said they were in favor of seeing the treatment carried out. The school board notified Dr. Marine and myself to make a survey, which we did, and we started in with the method of prevention. The work was started in April, 1917. The name and age of each school girl with goiter was recorded. They were examined, and the back of the card stated they were to receive eight series of treatments. In April we examined more than 4,000 girls from the fifth grade up to the twelfth. During that month more than a thousand girls took prophylactic treatment which simply consisted of one-half dram or two drams of sodium iodid given in drinking water for a period of weeks; I mean by that, three grains a day, once a day for two weeks, or ten doses, spring and fall. That is the prophylactic treatment we used in Akron. Examinations were made once a year and accurate records kept. The girl's goiter card was kept with the school report card, and when a girl went from one school to another the goiter card was passed on. There is no school where we kept as many records as accurately as we did in Akron. That is a tribute to the school system they had at that time.

In May, 1919, the last examination was made. We examined 5,500 girls altogether. We examined just about 10,000 different girls. We have a card index of 10,000 different girls. Half of them elected to take prophylactic treatment. No one was permitted to take it unless there was a written permit from the parent. In those three full years, not a single normal healthy girl developed goiter among the girls who were taking prophylactic treatment. Two of them developed goiter, but they were neglected cases. One was a case of congenital syphilis, and one a case of adenitis and tuberculous adenoids. Not a single girl developed goiter who was in any way in a normal condition. This simply proves other conditions were endemic and prevalent, hence it took more iodin than we were giving to keep the gland saturated. We watched more than a thousand girls for that period of time who were normal, and just these two unusual cases developed goiter. Among the same girls in the same school who did not take prophylactic treatment, 26.7 per cent developed goiter. Among the girls starting with small goiters and taking the prophylactic treatment, there were altogether 1,300. In more than 60 per cent of them during the three years the gland went back to normal, and only three-fifteenths of one per cent of them showed any inclination to increase. Among the girls who had small goiters and did not care to take prophylactic treatment, 3 per cent of them showed a decrease and 13 per cent of them an increase, the rest of them remaining perfectly normal.

The cases were classified in three groups, normal, small goiters or large goiters. Permit me to say here in further explanation of the thyroid function, the thyroid function has a very simple cycle through which it can go. You start out with a normal thyroid gland; it may enlarge, due to a deficiency of iodin, and if it gets iodin it reaches the colloid or resting stage. It may indicate deficiency of vitamins, again become enlarged, and go back to its resting stage.

Of the number of thyroid adenomas, there was about 6 per cent. There were a number of cases of goiter followed by adenomas which you would consider as hopeless congenital goiters.

I forgot to state in the beginning that at the first examination 56 per cent of the girls in the schools of Akron had definitely enlarged thyroids. If there was any question about it, we called it normal. We did not call anything goiter which we could not demonstrate to any one who had eyes and was willing to be convinced.

From a practical point of view, in last week's issue of the Journal of the American Medical

Association there is an editorial giving a summary of the work that has been done on the prevention of goiter. It is a vital question, not only to me but to every one of you. What are you going to do about it? Hold that question in mind.

In Ohio, that is, around Cleveland, we cannot carry out the prophylactic treatment for various reasons, and among them I may mention politics, Christian Science, and so on. But in six other cities and villages in that neighborhood they are carrying this treatment out as a public health measure. I do not know for sure, but I have heard that there are one or two towns in Michigan that are carrying out this preventive treatment of goiter. I believe Bay City is one of the cities in which they are carrying it out. They are very much interested in it as a public health measure in Grand Rapids. This simply shows what they are hoping to do in Michigan.

In 1918 Professor Fraenkel of Zurich, Switzerland, received our letter, requesting him to start the prevention of goiter in Switzerland. He started in the public schools there and his first survey in many of the schools showed that 100 per cent of the girls and boys had goiters. On an average throughout the whole cantons of Zurich, Berne, and so on, 87 per cent of the school children had goiter. We thought we had a terrific endemic of goiter when we had 60 per cent; they had 87 per cent of boys and girls in these cantons with goiter in 1918. They carried out prevention, using the same amount of iodin by a different method. They gave each child five milligrams of iodin put up in a nice preparation. It is the iodin that does the work. On Monday morning the children were given iodin. That is the first they had in the school systems in these cantons.

In January, 1922, the incidence of goiter in the cantons mentioned in 1917 was 87 per cent. In January, 1922, it was 23 per cent. They gave smaller amounts of iodin gradually, and they never had a single case of iodid rash, and with the tremendous decrease in goiter, they had not a single case of goiter developing. Incidentally they had 3 per cent of cases of goiter which represents about the number of adenomas we found which means congenital goiter.

As a practical measure, it is just as easy to prevent goiter among pregnant women as it is in adolescent goiter. But that problem is up to the medical profession. We are carrying it out in maternity hospitals, and a great many of the practicing physicians in Cleveland are doing it. We can sum it up in this way: if every expectant mother in this endemic goiter district can have her thyroid gland kept saturated with iodin, she would not develop goiter, and the child's thyroid would be normal.

When it comes to the presention of adolescent goiter as a public health measure, it can best be carried out through the public schools. We have an organization. the treatment can be given by the teachers, and a very important factor is educating the boys and girls so that whenever they go out of school they will continue to take care of their thyroid glands. If each one of us here would simply go home and tell the school board members about the importance of this prophylactic treatment, and can prove to them its value, and that we can prevent every one of these goiters in boys and girls for a maximum of five cents per girl per year, great good will have been accomplished. In a recent talk with Dr. Marine, he says that every expectant mother, when she learns the truth that goiter is the easiest thing in the world to prevent, in five years from now a symposium on goiter would sound like ancient history.

DISCUSSION OF THE SYMPOSIUM ON GOITER

(Papers of Dr. Louis B. Wilson, Charles L. Mix, George W. Crile, Wilbur O. Upson and O. P. Kimball.)

DR. ANGUS McLEAN, Detroit: I think the members of the Michigan State Medical Society are remarkably fortunate today in having heard this symposium on goiter and its treatment, medical and surgical, by the X-ray and radium. We have had the pathology summed up in an admirable manner by Dr. Wilson; we have had the viewpoint of the internist by Dr. Mix, and the surgical aspects presented by a master.

Eighteen years ago we had a symposium on this subject before this Society which was gotten up by Dr. Dock, now of St. Louis. The internists then did not take as favorable a view of how to cure hyperthyroidism as they do today.

The subject was likewise discussed recently in St. Louis at a meeting of the American Medical Association. The internists years ago were not quite so highly scientific as are those with us today. Goiter was beautifully compared to appendicitis, and the position that was taken with regard to appendicitis twenty years ago. We all know that you can have appendicitis, and that you can have an abscess and peritonitis. If the appendix or abscess is dealt with surgically the patient is likely to get well, but if the abscess is left alone it is likely to do great damage and may result in the death of the patient.

With regard to the method of operation, Dr. Crile discussed this subject before our Society two years ago with Dr. Bartlett of St. Louis, and recommended leaving a part of the thyroid, and leaving the wound wide open to allow the secretions or toxins to escape, instead of closing the wound. It is undoubtedly an advantageous thing to leave the wound open, thus establishing free drainage.

DR. FRANK R. STARKEY, Detroit: Dr. Crile spoke of removing a portion of the thyroid gland, just enough, but not too much. That is the thing I cannot quite understand, and I would like to have Dr. Crile, or some other surgeon, tell me how he arrives at that assumption. It is a fact that a great many cases of thyroid enlargement or goiter will vastly improve under iodin administration. It is also a fact that the gland enlarges under certain physiological conditions, like pregnancy and during menstruation, and also in the presence of infection.

I had a patient recently that impressed that point upon me strongly. The patient was a young woman with a large goiter. She was asked to come

to me for the treatment of this gotier, although she had been previously under the observation of an internist or a surgeon. I looked at her throat and saw enormously enlarged tonsils. I sent her to a throat specialist, who removed he rtonsils, and in three weeks her goiter was two-thirds gone. In three months it was entirely gone. She received no other treatment except a little iodid of iron. I am sure you have all seen cases of that kind.

So far as metabolism is concerned, I look at that as a part of the technic of laboratories, and something which people have gone crazy over. It is of no legitimate value except in a limited number of cases. It is of no value as a routine measure.

DR. HUGH CABOT, Ann Arbor: The thing that strikes me in the discussion this afternoon is that most of us have come a long way to hear this symposium and to listen to the different viewpoints that were brought out. Most of us have been brought up under the tutelage of great physicians and great surgeons. I have been amazed to see here that a great internist and a great surgeon have given us precisely the same views, almost in the same words, and I did not suppose it was possible. I believe it is one of the greatest revelations and revolutions that has taken place in medicine, on account of the harmony that exists between the views of the internist and those of the surgeon.

I am not able to come to the defense of the X-ray as much as I would like to do. I wish I knew or that anybody else knew precisely what happened when you turn an engine of destruction loose upon an unfortunate patient. I was told long ago, and I have continued to believe it, that the first principle in the practice of medicine is that we shall do the patient no harm. I do not know that I am not going to do a patient some harm by turning loose a force which I know will destroy tissue, and I am not quite sure what tissues you will destroy, as there are various things that lie in the neighborhood. I am one of those terribly biased creatures who have struggled and sweat in trying to get out thyroids after they have been X-rayed, and personally, I don't want them X-rayed.

DR. W. J. CASSIDY, Detroit: We operate today in the average general hospital, and patients get well in spite of the hospital and not because of the hospital. Patients are given preliminary doses of morphine or some other drug, and then what happens? They are asleep. They are taken down the middle of the hall, lying flat on tables, with pans and dishes dropping in all directions, and very soon they are wide awake. You have done the thing you have tried not to do. You have given the patient something to quiet him, but instead you have stirred him all up and have produced an effect on him that you tried not to do. Success does not lie so much in the perfection of surgical technic, in the use of the X-ray and radium, but it must come from a better management of patients in hospitals and better working of the operative groups in the hospitals rather than from advancement in technical measures. So far as any one measure of treatment is concerned, goiter must be put on the same basis as the treatment of any other disease. You cannot advocate dogmatic treatment for any one disease. If you are satisfied that X-ray or radium should be used, do not hesitate to use it. If patients need surgery, give them surgery, or if you think they need surgery, X-ray and medicine, give them all in combination.

DR. M. A. MORTENSEN, Battle Creek: I should like to voice what has been said this afternoon and to emphasize the point that I think we have reached the time when the surgeon and internist will get closer together in the management of not only cases of hyperthyroidism, but other types of diseases, where both are necessary to come to proper conclusions as to diagnosis and treatment.

The diagnosis of hyperthyroidism is not always easy. Many times it requires a longer period of study and careful observation, and even then we are not certain as to the diagnosis.

We have heard about basal metabolism, about the Goetsch test, and a study of the heart, and so on, as factors in coming to a conclusion as to the diagnosis, and what should be done. I want to emphasize the importance of studying the circulatory system in all cases of hyperthyroidism, and particularly in the type of border-line cases. I think it is important for us to bear in mind in the great percentage of cases of hyperthyroidism that we have a high pulse pressure; that is, we get a systolic pressure higher than the average for the age of the patient, and we get a decidedly lower diastolic pressure in these cases, and that many times will be a guiding factor as to the presence of hyperthyroidism and, at the same time, we should study the pulse as related to exercise and its response to the same. Take a patient with circulatory asthenia, as a rule his pulse will not be increased so materially from exercise in moderate amount as a patient that has hyperthyroidism, so that we have factors there that will be of benefit to us in coming to a conclusion. Furthermore, I wish to say that we forget the surgeon has his field and the internist has his field.

Dr. Cabot stated that the X-ray was a dangerous thing. Others may think the knife is a dangerous thing, and should be wielded with just as great caution as the X-ray. Anyone who has had experience in the management of cases of hyperthyroidism treated by surgeons without success, knows that they constitute a difficult problem. I have had a few cases that have been very difficult to manage because of having had surgery without results. I am sure the surgeon has no more desire to treat a patient who has had surgery applied to the thyroid than he does a gland or patient who has received X-ray treatment. Both of them are not as easy as in the beginning, and consequently we must try and use extreme judgment in our conclusions as to the patient's condition and as to the steps that are to be taken to relieve the patient of suffering.

DR. M. W. CLIFT, Flint: I was rather in hopes Dr. Case would be here to say something regarding the X-ray feature of this discussion. I was glad to hear a defense of the X-ray. However, I think there is too much confidence displayed at the present time in regard to the benefit of X-ray treatment in certain types of hyperthyroidism, but I do not think we should dismiss it absolutely from the field of therapeutics. Only recently in the Berliner Klinische Wochenschrift, an article appeared which gave the statistics of 300 cases of goiter treated by means of the roentgen ray. The conclusions reached were very much the same as regards results from the use of the X-ray as from surgery. Aside from that, according to these statistics, there was no greater frequency of recurrence following the use of the roentgen ray than from surgery.

As to the remote dangers of raying the thyroid, I think it must be open to question as to the effect of the ray on tissue. It is only necessary to refer to the work that has been done at various times in the Memorial Hospital in New York, in which the effect on various types of embryonic tissue and on other types of tissues have been pretty well demonstrated.

For a long time most of our surgical friends have been worrying about what the X-ray would do. It is only necessary to call attention to the fact that we have been raying cases for a great many years; we have rayed them through all sorts of difficulties, and yet outside of the unfortunate cases of burns, the remote effects of the roentgen ray are not very well established, and certainly have not produced any tangible thing we can base an opinion on.

As to the treatment with the X-ray, it seems to me it has now about the same status as surgery. I do not wish to be understood as advocating the use of X-ray to the exclusion of surgery. We all agree that there are certain types of cases that are poor surgical risks. These cases I believe are good X-ray cases. Our experience has been extremely satisfactory, controlled with the basal metabolism and following out Dr. Crile's regime following and before X-ray treatment. It strikes me, it is just as necessary to prepare patients for the X-ray, as

it is for surgery, and I do not think the last word has been spoken. There is no question as to the success of surgery, and there is no question about the success of the X-ray, up to a certain point at least.

DR. THEODORE A. McGRAW, Detroit: I would like to speak briefly about the dangers of iodin. I wish Dr. Kimball had said something about that. The reckless use of iodin should be deprecated; by that I mean, what used to be the ordinary treatment of goiter, and which is still followed by a few men, and that is the treatment of colloid goiter by the use of iodin ointment. One does not know how much iodin he is giving, and very many cases that are treated with iodin ointment finally fall into the hands of surgeons as hyperthyroid cases.

I should like to ask Dr. Campbell whether he has taken up the use of potassium iodid in the form of a table salt, which is used in conjunction with prephylactic treatment. In a very interesting talk by Dr. Farr of Minneapolis, on that subject, he says they are preparing a table salt in Minnesota to be used constantly by the patient for the prophylactic treatment of goiter.

DR. R. E. LOUCKS, Detroit: After the discussion of today of the different forms of treatment of goiter, it is gratifying to the clinical man that no one treatment is indicated in all cases of thyroid disease. After the pathology is established, it is up to the man who makes the diagnosis to judge and decide what form of treatment is indicated in this particular disease or type of disease. Instead of calling it a deficiency disease, I would classify it as a functional condition. For some reason or other, it has been explained that when we come to adolescent age, when we have the adolescent type of thyroid activity, it must be a functional condition. Why, it is not for me to say at this particular time. In other cases there is some infection thrown into the system which kills the activity of the thyroxin or some of the other secretions, and we have functional activity of the gland. If this is kept up long enough and severe enough, we not only get physiological functional activity, but a pathological condition. When we get pathology we have the different types that have been discussed today. It is then we have to decide.

I wish to say a word in reference to radium, inasmuch as it has been mentioned this afternoon. Radium has its place in this field the same as surgery, medicine, or the X-ray. Radium will not relieve every case of hyperthyroidism, but it will cure most of them. It will kill none of them. It is not the radium or the X-ray that kills these patients; it is the acidosis condition. In our cases we treat with radium we take the metabolic rate before treatment; we check up our cases afterward, and we find inside of three months we have a metabolic rate that drops from plus 40 to plus 20, and in six months it drops from plus 20 to plus 10, and in nine months the metabolic rate will be normal. In that way, instead of criticizing or censuring the metabolic rate as determined by the laboratory, it is perhaps the only thing in the line of laboratory work we can prove by our results.

I am surprised to hear any man get up and criticize the work done in metabolism at this present day. As I see it, it is the only thing whereby we can measure and estimate the function of the thyroid gland and show the results of our treatment either with surgery, the X-ray, or radium.

DR. WILLIAM J. WALL, Davison: I would like to ask how large a dose of sodium iodid it is necessary to give to prevent goiter in a particular individual.

In regard to the efficiency of prophylactic treatment, it may be effectual in the human but not in sheep. I have a friend in North Liberty who lives near a high prairie. About fifteen years ago he took in a flock of sheep and found that every lamb taken in that had a goiter lived but a short time, and his attempt to raise sheep was a failure. He wrote to the Dominion government at Ottawa, and was advised to give iodid of potash for a certain period during pregnancy. He tried this out and it worked successfully, and he has with his flock of sheep established a high range at the present time as a result of that treatment. I might say that adolescent goiter is very prevalent in that district as well.

DR. JAMES T. CASE, Battle Creek: I want to say just a few words with regard to radio-therapy in the treatment of thyroid disease. We want it distinctly understood that we do not recommend radio-therapy to the exclusion of other means of treatment.

About the question of damage to patients as brought up by one of the discussers, I desire to call attention to the recent contributions of Schwartz in Vienna, Pfahler of Philadelphia, and a group of men in Minneapolis, who have demonstrated histologically, physiologically and pathologically from the evidence presented by them, that very little damage is done to these patients by radio-therapy and it behooves surgeons to familiarize themselves with the results before raising the question of irreparable damage being done to patients. The radiation treatment of goiter has been in vogue for a great many years. The only damage which can occur to a patient is a possible myxedema, and that surely does not occur any more often with radium or X-ray treatment than with surgery. The only other damage we can consider is that done to the skin, and I think we only have to recall some of the rather conspicuous scars following this type of surgery, with the relatively few cases of scars following radio-therapy, to feel there is not very great difference after all in the marks left upon the patient, and no one wants to make these scars if he can help it.

DR. W. D. MAYER, Detroit: I would like to ask Dr. Crile to say something about the relationship between focal infection, particularly of the tonsils, and hyperthyroidism, and if he advises the removal of such tonsils, whether he does it before or after the thyroid has been taken care of. That has been a more or less vexing question to me.

DR. LEO C. DONNELLY, Detroit: Practically every one has discussed the other papers, but very little attention has been paid to the paper of Dr. Kimball, which I regard as the most important of all. We all feel we are citizens; some of the older people really are influential citizens in their respective districts, and, it seems to me, as citizens we have no right to go home from this meeting without making some effort toward the prevention of goiter. When it only costs five cents for each school child per year, we ought to take the matter up with our boards of education and try to prevent goiter.

DR. CHARLES G. JENNINGS, Detroit: We have had very satisfactory presentations on this subject. We have had a clear-cut exposition of the pathology. We have had a clear-cut exposition of the relation of the thyroid to internal medicine and the surgical treatment, and a tentative dissertation on the value of radio-therapy in this disease.

First of all, we have had an exceedingly clear-cut dissertation upon the prevention of goiter, which is the most important of all. I wish to bring out one point, and that is the relation of focal infection to the development of hyperthyroidism, particularly in individuals who have already a simple goiter. In any field of observation I think I have seen this relation very clearly. An individual with a simple goiter, with a chronic infected upper respiratory tract and nasal chambers and nasal accessory sinuses, develops very frequently hyperthyroid symptoms, not as severe as in Graves' disease, but a mild hyperthyroidism, and Dr. Crile mentioned the necessity of thoroughly eradicating the source of focal infection. He mentioned one case; I could mention dozens in which the relationship has been apparent, and which has been, before operation upon the focal infection, made certain by the relief of the hyperthyroid symptoms, by the relief of the focal infection. Of the focal infections, the tonsils occupy in my field of observation the most important relation to the development of hyperthyroidism.

DR. GEORGE W. CRILE, Cleveland, (closing on his part): As to when to remove an infected ton-

sil in a patient having hyperthyroidism, whether before or after operation, we have done it both ways. First, we have removed the thyroid to build up the factors of safety, and secondly, have removed the tonsil.

Some one asked how I can tell how much thyroid to leave. The trouble with the thyroid in these cases is its great capacity to undergo hypertrophy, and it comes back, and if you remove too much thyroid, there is hyperplasia after a thyroid operation, and the great difficulty is to keep it down rather than leave too much.

As to the remarks of Dr. Kimball, he is at home. He is not like a prophet without honor in his own country. Marine and Kimball are at home doing this work.

I should like to say a word for the benefit of our X-ray friend. In the X-ray consideration of our work, I will say that we have a number of cases that were being X-rayed, thinking the X-ray might take the place of ligation in preparing for thyroidectomy, but we have been disappointed in the temporary and uncertain results, so that we gave it up. A large number of the goiter patients that come to us have had X-ray treatment for a long time and still have the disease.

We have seen the skin of the abdomen burnt through and through and even muscles burned. Of course, X-ray men would put this down as to improper treatment, or later to improper surgery. The X-ray is an agent of destructive possibilities in these cases in which the tissues were all burned and supplanted by scar tissue. The thyroid had returned and became hyperplastic, with perfectly normal thyroid tissue. In spite of X-ray treatment, the thyroid has great capacity for recrudescence and repair. If you look over the list of names and cases and see the number of patients that have died during the time of protracted treatment with the X-ray, you will find the mortality rate is much heavier than that of surgery in patients as a result of the disease, and not as a result of the X-ray treatment alone. At the present time, we feel that the X-ray treatment will have to be something defferent than I have seen done thus far in the consideration, first, of recrudescence; second, its uncertainties, and third, in some cases the injury that is done. In many cases it has given us lots of scar tissue when we have come to undertake surgical treatment.

DR. LOUIS B. WILSON, Rochester, Minn., (closing after his part): Though it is the traditional function of the pathologist to throw monkey wrenches into fine diagnosis, I do not want to do that this afternoon after the wonderful harmony manifested here, yet I do feel my job is going. (Laughter).

I want to say just a word or two to indicate that I believe there is still a chance for study even in goiter, notwithstanding the excellent symposium we have had. There are a few facts which still remain unexplained. We have had a great many thousand cases of goiter at the Mayo Clinic. About half of them have been simple, and the other half have been cases of hyperthyroidism, with no relationship between the geographical distribution of these two types. There are certain areas which we know are areas of endemic goiter in the United States, but there is no relationship whatsoever, so far as we can determine, in the geographical distribution of hyperthyroidism in the United States. That shows, it seems to me, that there is an entirely different etiology which is not related to the supply of iodin. That is one of the things we do not know about.

In the next place, I am afraid we are getting too sure about thyroxin. Dr. Kendall has been working three years on the synthesis of thyroxin, and he has obtained several products. He is studying the whole field of products. He has obtained several products that come pretty near doing the same as thyroxin, yet they are not thyroxin.

Dr. Mix spoke of the frequency of involvement of the dorsal sympathetic ganglia. I have examined a lot of these cases—I cannot tell you how many—and have never yet found any evidence of any involvement of the dorsal, lumbar, or the sacral sympathetic ganglia in pateints that died of exophthalmic goiter. The involvement is always present in the cervical sympathetic. I am wondering if the symptoms which were ascribed to involvement of the dorsal sympathetic ganglia may not have beee due to another thing which I feel the clinician has overlooked, that is, involvement of the interclostal muscles. In regard to what has been said about Muller's muscle in its relation to exophthalmos, I am quite sure that is not true. I have yet to see a Muller's strong muscle develop in cases of exophthalmic goiter I have examined, but what I have found, on the other hand, in relation to exophthalmos is, that there is a universal relaxation of the recti muscles of the eye, and universal intense hyperemia in the vessels at the base of the eyeball, quite sufficient, it seems to me, to force the eyeball out if there is relaxation of the recti muscles. Every clinician knows that no advanced case of exophthalmic goiter can readily step up a high step because of involvement of the quadriceps extensor we cannot get on the examining table. I have yet to find one who has made use of the universal involvement of the sternocleidomastoid muscle as a diagnostic symptom. Every case of exophthalmic goiter that has come to autopsy under my observation has had a most extensive degeneration of the sternocleidomastoid muscle. The intercostals, the sternocleidomastoid, the recti, and the quadriceps extensors are the principal cheletal muscles involved.

On the other hand, I have had clinicians tell me they had evidence of involvement of the diaphragm, and I have not yet seen any involvement of the diaphragm in any case of exophthalmic goiter.

Dr. Crile says that we should give oxygen to the cells in exophthalmic goiter. Are they not getting too much now in hyperthyroidism? Is not thyroxin the oxidizing agent? If we have too much of it, why give more?

Dr. Kimball's prevention of goiter, is a magnificent piece of work. I would like to throw out a suggestion which may or may not be of any value: We find when we administer thyroxin to patients, it lasts three weeks, and then fades out rather rapidly. It is like kindling thrown on the fire; it burns for a while, then goes out. This might be a suggestion concerning the daily use of a salt containing iodin. If we take salt once in three weeks we probably would be all right.

One thing more, and that is the pathology of the follicle in reference to so-called toxic adenomas. I have tried to convey an impression that there is a difference in the way the parenchymal cell handles its output in these mild, continuous nonexophthalmic cases. It seems to me, it does make it, put it into the follicle, and then take it out again. Perhaps that is wrong, but I am suggesting it.

There is one other thing we have to investigate, and that is, why exophthalmic goiter patients die. Nobody knows. I have made lots of post-mortem examinations with by-standers asking, "why do they die?" Often there is no adequate causes for death.

DR. O. P. KIMBALL, Cleveland, (closing on his part): In the first place, let me take up the question as to the amount of iodin and the dangers of using iodin indiscriminately. In an article that we have written we have called attention to the small amount of iodin that is needed. As a matter of fact, two grams of iodin may be given for a period of three weeks, but in my judgment it would be better if we gave one grain a day for a period of thirty days.

Let me take up the question raised by Dr. Wilson in a slightly different way in regard to giving iodin when we have a normal thyroid and the giving of thyroxin. The storage capacity of the thyroid gland is about 30 to 40 milligrams of iodin. I use two grams of sodium iodid and I use a simple salt of iodin. Two grams of sodium iodid contains ten times enough to saturate the normal thyroid gland. Taken for a period of a month, you will have filled the thyroid gland full of iodin. We simply use amber bottles of two-quart size and put in enough sodium iodid, so that a teaspoonful con-

tains three grams, put in a convenient place, so that different girls come along with sanitary drinking cups and fill the cups with water, and the teacher puts a teaspoonful of this sodium iodid solution in the water and makes them drink it. The teacher watches these girls very carefully and knows that they take it. That is an important part. We have called attention to the danger of too much iodin.

The next question is with reference to potassium iodid. Dr. Slean issued some reprints last year in which he advocated the use of sodium iodid in common table salts. A company is putting out that salt now, a so-called new salt. I saw a sample recently which was marked N. M. an dour Detroit chemists were induced to give their opinion regarding it. As iodin is such a hygroscopic salt, it will probably run out and go down to the bottom, and you will have iodin in about the last quarter of an inch in the bottom. Some time or other a child who is nervous will get quite a dose of iodin and the rest of the people will not be getting any. You do not have any control over that. I would prefer seeing a method carried out where I can give a definite small amount.

As to the method they are using in Switzerland at present, the Goiter Commission has recommended that to the government, so that next year they will carry that out throughout all Switzerland as a public health measure. Each child gets five milligrams the first thing Monday morning.

Some one spoke about functional disease. Every normal girl goes through the period of puberty, and we see thousands of cases of pregnancy. These are two periods in a girl and woman's life when the function of the thyroid is whipped up. In that sense it is a functional disease, but these are normal functions, and the real difficulty at this time happens to be while there is an increase in function. There is also a lack of iodin in the thyroid.

I had intended to give you a real story of the prevention of goiter in animals at Sheridan, Wyoming, and through the valley of the Pemberton Meadows in the Province of Columbia. A most interesting article we can read will be found in the New York Medical Journal of March 15 of this year. Dr. Marine and I got in touch with some of the leaders of the grangers and the agricultural men in British Columbia in 1918, and this article in the New York Medical Journal gives a summary which amounts to this: They could not raise pigs, calves and lambs and even their chickens. Roosters could not grow after a year old on account of goiter. These grangers give sows three drops of tincture of iodin once a week. The sheep got iodin in the water, and the remarkable thing is that since the grangers have started using iodin they are raising so much young stock that they cannot raise pigs to feed them. They have not had a single case of goiter. In other words, they have obliterated goiter in their domestic animals where they can take care of them by that simple method. This method is carried out through the whole valley of the Pemberton Meadows.

If any of you should go back home and see that the school board or the health authorities are interested, I will be very glad to write down the details of my experience and tell them how to start. Furthermore, if the school board and health authorities so desire, I will pay my own expenses and tell them how to do it.

DR. CHARLES L. MIX, Chicago, (closing the discussion): I do not know that I have much to say except to come to my own defense. Are you sure, Dr. Wilson, I said dorsal gland? We agreed it was the cervical gland. I am glad to know that part is straightened out.

There was one thing I had thought might be added, that simple goiter occurs, for the most part, in girls in the preportion of four to one, whereas exophthalmic goiter does not. It occurs pretty nearly equally among the two sexes. It shows a fundamental difference between the two.

I should like to throw a monkey wrench of my own into this discussion. Why is it, if hyperplasia as a compensatory hyperthrophy in the quest for iodin, the same gland subsequently becomes senile because it pours too much thyroxin in the system? That is a poser, and while it does not bear on the same proposition perhaps, yet it does seem it is physiologically the case. At any rate, it is hard to explain the proposition on any other basis. We can easily understand how thyroxin intoxication can go over to the stage of myxedema, but how thyroid deficiency with compensatory hypertrophy should subsequently become a hyperthyroidism case is a little difficult to figure out.

There was one other point I thought ought to be mentioned, and that is this, that prophylaxis is never going to prevent exophthalmic goiter; it may to some extent insofar as it overcomes fatal adenoma and lessens the incidence, but it will not prevent it. We will have cases of thyroids which have gone wrong.

In regard to the circulation, something was said about the very important fact that the systolic pressure is high, while the diastolic pressure is low. That is very true, but that is what the problem is. If you are accustomed to looking at a patient and noticing this throbbing, you do not need to get out your manometer to figure it out. I think in the majority of cases we can pick out these throbbing, pulsating cases, and without taking blood pressure you know before you do it, it will be 170 and about 60 or 70, with a pulse pressure of 100. You will notice also that as these cases improve throbbing disappears; the two pressures get together. These patients fluctuate; the throbbing will fluctuate. Some days there will be a great deal of throbbing, while on other days there will not be so much. Evidently the dosage put into the system varies from time to time, from hour to hour, so that the intensity of the intoxication varies.

I was glad to hear about Dr. Kendall's experience in regard to thyroxin because, as I stated, I believe that there is more than one form of intoxication. I have come to the conclusion that one form of toxin would explain all of the cases, and that we have merely varying degrees of susceptibility on the part of certain organs to diffierent organisms.

I also think—and I believe you will agree with me—that Dr. Wilson ought to be a clinician instead of a pathologist. I think he ought to give us some of his observations in regard to the sternocleidomastoid and other muscles and set us right. I am glad to be set right in regard to what he said about Muller's muscle. The explanation of the hyperemia in the postorbital region is a more sensible explanation than any effect upon the cervical sympathetic, particularly when you try to dissect it out.

BRAIN ABSCESS OF OTITIC ORIGIN

MAX MINOR PEET, M. D.
ANN ARBOR, MICH.

A brain abscess is the result of a circumscribed purulent encephalitis. The suppurative process is always subsequent to a more or less localized inflammation of the brain, due to the introduction and multiplication of pyogenic micro-organisms.

The usual etiological factors are otitis media, frontal sinusitis, ethmoiditis, trauma and septicemia. Of these, otitis media with mastoiditis is by far the most frequent, over half of the cases being due to this cause. The brain abscess develops about four times as frequently in patients with chronic otitis media as in those with acute middle ear infections. No age is absolutely immune, although probably not more than one per cent occur under five years of age. Between ten and eleven per cent occur from the fifth to the tenth year, while the second decade has an incidence of over thirty-seven per cent.

The third decade shows a slight drop to thirty and eight tenths, according to the compilations by Okada.

The usual pyogenic organisms causing brain abscess are the staphylococcus aureus and the streptococcus pyogenes. However, a wide variety of organisms have been isolated and mixed infections are not rare. Occasionally the tubercle bacilli is found, associated with a tubercular osteomyelitis of the temporal bone.

The usual path of infection is through the Eustacean tubes to the middle ear, thence to the mastoid cells, and later by direct continuity or through emissary vessels to the dura and underlying brain. In children the infection can pass more or less readily through the patent squamo-petrosal fissure, while in adults it passes through the thin tegmen tympani which is found carious at operation. The abscess in the above case will usually be found in the temporo-sphenoidal lobe. On the other hand the infection may pass through the mastoid process with or without involvement of the lateral sinus, resulting in a cerebellar abscess. The bony plate separating the mastoid cells from the sigmoid fossa is very thin and yields readily to infection so that the abscess is usually found immediately adjacent to the lateral sinus at this point. Again, the infection, especially in chronic cases, may spread from the labyrinth through the internal auditory meatus to the cerebellum. In the ordinary case of brain abscess osteomyclitis of the bone overlying the dura takes place and the infection spreading over the adjacent dura produces a pachymeningitis externa. Organisms then pass through the dura give rise to a pachymeningitis interna. Fortunately the inflammatory process in the dura frequently causes a localized leptomeningitis with the formation of adhesions between the dura and the underlying arachnoid and pia walling off the dangerous subarachnoid space. The infection is thus seen to pass by direct continuity from the carious bone to the dura, through the latter to the arachnoid and pia and hence directly into the brain substance. Complications which may arise during this passage are epidural abscess, sub-dural abscess and meningitis. The brain abscess may be a direct continuation of the subdural suppuration, the intervening membranes having broken down and a cortical abscess developed. Frequently, however, the superior blood supply of the cortex, while not preventing the passage of the pyogenic microorganisms, does prevent actual suppuration and the abscess develops in the deeper, more poorly vascularized white substance.

A visible tract of inflammation may not be found. In these cases, according to Macewen, the organisms are carried by direct vascular channels, either by extension of an infected thrombus through emissary veins to the pia and subcortical tissue, or by an embolus carried inward by a reversal of the circulation.

In this connection it is interesting to point out that the vessels of the pia have numerous anastomosis while the vessels of the white substance are end arteries. This may account for the much frequent occurrence of subcortical rather than cortical abscess. Usually the brain substance overlying a point of suppuration shows considerable inflammation, sometimes definite softening. Occasionally, however, the cortex is macroscopically normal.

According to Heinmann, who collected six hundred and forty-five cases, abscesses in the temporal sphenoidal lobe are about twice as frequent as in the cerebellum. Occasionally the abscess of otitic origin is found in the frontal or occipital region and cases have been described where the abscess was located in the optic thalamus and in the pons. Except for the very rare case we may say that the abscess is always on the side of the primary focus.

Okada finds that the cerebellar abscess is most frequently associated with an acute otitis media. On the other hand chronic otitis media, often of many years duration, especially when associated with choleosteotoma is the usual cause of the temporo sphenoidal abscess. They develop most frequently during an exacerbation of the chronic process or when free drainage is interfered with by polypoid or other growths. There is considerable evidence to indicate that brain abscesses may develop even after the otitis media or mastoiditis has been cured.

DEVELOPMENT

The development of a brain abscess has been divided clinically into four stages, namely, the initial, the latent, the manifest and the terminal. The initiatory stage represents that period in which the acute purulent encephalitis develops. Actual suppuration with the formation of a pocket of pus is the end result of this stage provided the encephalitis remains localized. Rather frequently the inflammatory process spreads diffusely and death ensues before an abscess cavity can develop. In this initial stage there is found microscopically a dilatation of the blood vessels, rupture of capillaries, oedema, infiltration of leukocytes and much cell detritus. The symptoms are those of an acute encephalitis, delirium, marked irritability, sleeplessness, excruciating headaches, or in some cases, drowsiness, somnolence or even coma. The temperature is high, a leukocytosis is present and without other complication, the pulse and respiration are usually increased. There may be some tortuosity of the retinal vessels or a slight choked disk. The symptoms

may be entirely those of a meningitis, which in fact is not an unusual complication. In fact it may be absolutely impossible to make a differential diagnosis even with the spinal fluid findings at hand. This initiatory stage usually lasts only a few days.

No surgical procedure directed at the intracranial lesion is of value at this time. The primary focus should be eradicated or at least efficient drainage obtained and if sinus thrombosis has developed, ligation of the jugular vein and irrigation of the lateral sinus in the usual way is indicated. Any attempt to reach the intracranial inflammation, even by needle puncture, is to be definitely discouraged as no possible improvement can result since no free pus is present. The procedure may be definitely harmful, exciting further inflammation and might be the cause of a diffuse encephalitis or meningitis, whereas if the process had been treated conservatively, it may have become localized. The administration of anti-streptococcus serum when the streptococcus is found to be the causative organism, may be of some benefit, according to a few case reports. Personally, I have seen no improvement following its use and am doubtful of its routine value.

The latent or quiescent stage represents the period in which the acute symptoms subside, the abscess becomes circumscribed and a definite wall develops. The signs and symptoms of an intracranial lesion may be wholly lacking. Usually, however, headaches at rather frequent periods are complained of. It may be very excruciating or of a dull, steady type. The location is not diagnostic, frequently being in the frontal or occipital region or both. Patients will generally state that the headache differs from any they have ever had before. Irritability, changes in temperament or disposition, inability to concentrate, slower mental reaction or what we might call a sluggish mentality, poor memory or lack of initiative have all been noted during this stage. The pulse is usually normal or slightly subnormal, temperature is frequently subnormal, but the leukocytosis will often show a definite rise. Respiration vary, but usually are a slow normal. The period of marked mental irritability, which I have seen in several cases, did not show the corresponding rise in respiration and especially the pulse which would normally be associated with such outbursts.

Frequently the headaches are supposed to be due to the otitis media, or a frontal sinusitis. Sometimes the eyes are thought to be at fault and when, as not infrequently happens, the patient has nausea, or vomiting, or both, the stomach or intestine is held responsible and treatment directed at the gastro-intestinal canal is instituted. An examination of the fundus will usually reveal tortuosity of the vessels, a haziness of the cup or in more advanced cases a choked disk. These changes may be found in one or both eyes or more pronounced in one, but even when unilateral they have no localizing value.

This quiescent period may last from a few days to several months and on rare occasions, even years. At times the abscess develops so rapidly that we can scarcely speak of a latent period and in reality it is only represented by a few hours in which the acute symptoms are somewhat abated. This is noted especially in infection with the streptococcus haemolyticus. In these cases the presence of an abscess generally is suggested by the failure of the temperature and more particularly the leukocyte count to return to normal and for the headaches to disappear after a properly perforated mastoid operation. It is only when the symptoms fail to clear up that the otologist looks for a possible intracranial lesion.

The latest stage is the ideal time to operate, as the obscess cavity is well walled off, the surrounding encephalitis has disappeared or at least become stationary, and little permanent damage has been done by tissue destruction.

The manifest stage represents a continuation of the previous period with the addition of more pronounced signs of intracranial pressure and depending upon the location of the abscess, the development of focal or localizing symptoms. No sharp distinction can be drawn between these two stages and in fact the abscess in the socalled quiescent period would frequently be manifest if a more careful examination of the patient was made.

The symptoms which become more pronounced are those of increased intracranial pressure—headache, prejectile vomiting, slowing of pulse and respiration, and sluggish mentality to the point of drowsiness or the "dreamy state."

The leukocytosis averages about sixteen thousand, but varies considerably. The temperature may remain normal or sub-normal, but rarely shows a noticeable rise.

A sensory aphasia is common in temporosphenoidal abscesses. A true aphasia may be absent, but a condition simulating aphasia and sometimes diagnosed as such is often present, namely, the slow, hesitating speech due to general cerebral compression. Motor aphasia may occur in abscesses of the frontal lobes and at times is the only localizing symptom. Loss of the grip in the hand of the opposite side is an important and easily elicited sign frequently found in large abscesses in the temporal sphenoidal lobe. A lesion in the cerebellum may give the characteristic gait, a positive Rhom-

berg sign, asyneagia, pass pointing, dysdiadokokinesia, and nystagmus.

Terminal stage. This is a period of recrudescence. The abscess ruptures either into a ventricle or through the cortex, or the infection passes through the abscess wall, in either case producing an acute encephalitis and frequently a fulminating meningitis. The symptoms are those of the acute encephalitis delirium or coma, slow respiration of the stertorous or cheyne-stokes type. Dilated pupils, rapid pulse and high temperature are precautions of the end.

Operation during the terminal stage is almost hopeless. I feel however, that it is justified as occasionally a patient will recover.

Choice of approach to the abscess.

If the abscess is directly beneath the original focus of infection and the dura, eruchnoid and pia are adherent—then the ideal approach is certainly through the primary infected area.

If, however, there is no evidence of the presence of an abscess such as a change in color, budging, or lack of pulsation in the dura, then I feel that the danger of carrying infection into non-infected areas should make us ehsitate to immediately search for a possible dorcal collect of pus.

DISCUSSION

DR. ROY B. CANFIELD Ann Arbor: Doctor Peet says that the first stage of brain abscess is that of acute encephalitis, with which I agree, but I believe also that during this acute stage there is an attempt on the part of nature to produce that limiting membrane which later appears so well defined. Why in one instance that produces acute encephalitis and in another brain abscess is difficult to understand, but it certainly does.

Doctor Peet stated that the infections usually found are streptococcus and staphlyococcus. The only infection I have been able to find in brain abscess has been the streptococcus, and in my own experience the presence of staphlyococcus indicated a secondary infection from the surface.

In respect to getting results in these cases, I think the important thing is to know whether the abscess is of the superficial type. Superficial brain abscesses are treated quite successfully surgically, while deep brain abscesses are always fatal unless one is able to bring that abscess to the surface and treat it as a superficial abscess. Therefore when the abscess is located my first desire is to make that abscess a superficial one. With that in mind I introduce the encephaloscope. The encephaloscope I use is an old-fashioned childrens' proctoscope which fits well into the obturator. That encephaloscope is inserted gently along the tract of the incision and the abscess drained through it, and it seems to me in that way the minimum amount of trauma is produced, especially considering the fact that in order to get results we must bring that abscess to the surface.

I take respectful issue with Doctor Peet with regard to the use of tubes. I prefer to treat a brain abscess daily with the encephaloscope. If you slip the encephaloscope into the abscess once and gently move it up and down the tract you have produced a channel through which you can make drainage. If you do that the second day, the encephaloscope slips along to the abscess without pressure, and you can gently wipe out the abscess with sterile cotton, withdraw the encephaloscope, bandage the wound, and leave the patient in good shape until the next dressing. By doing that it seems to me you achieve one thing, that is, during the intermission between treatments the brain has nothing in it which can traumatize; but if you insert a rubber tube and a piece of gauze and leave it there from one dressing to the next, you have introduced a foreign substance that moves back and forth with the cerebral circulation in such a way that to a certain extent in the depths of the wound you make soup of the deeper parts of the brain.

Following the insertion of the encephaloscope and inspection of the abscess, gently wipe it out, then pass a swab of cotton saturated with Dakin's solution through the encephaloscope, draw out the encephaloscope, later draw out the swab of cotton, and you have sterilized the abscess cavity and the tract to the surface. Our rule is to do that daily until the abscess cavity and the tract has remained sterile for fourteen days. Why fourteen days? Because the life cycle of the streptococcus in any wound is thirteen days. If the wound has remained sterile for fourteen days you can suspend the treatment and allow the wound to close, and if you should have a re-infection, your tract is prepared to the surface. The abscess is easily localized and you can repeat it.

Now I submit that the traumatism of the brain by the encephaloscope, nicely handled, is less than the traumatism resulting from this wigwagging back and forth of the drainage tube. I do not wish to be understood that my results in brain abscess are better than Doctor Peet's, but in the last six cases I have had five recoveries, and of these four were deep. One was 3⅛ inches from the surface of the brain. That case got well. The brain was daily treated with the encephaloscope for about three weeks, at the end of which time the abscess had been sterile for fourteen days. One is amazed to see the rapidity with which these abscesses come to the surface. In three or four days there is no longer an abscess cavity, but a straight path to the bottom of the abscess, and that bottom of the abscess comes rapidly to the surface, so that in eight or ten days that tract is an eighth of an inch deep.

One great precaution that we take is the sterilization of the field around the abscess. Before the brain is incised it is carefully cleaned with iodin and cultured, and that culture is repeated at regular intervals, so that the surface in the neighborhood of the brain is sterile, and the hands are kept eight or ten inches away from the scalp because we fear we will introduce from the scalp the staphylococcus albus. We have found recurrence of the abscess at the end of six weeks because of the introduction from the scalp of the staphylococcus albus.

I see some of you shaking your heads when I speak of the encephaloscope, but I beg of you to give it a trial. Of course if you have a case where some of the brain substance is destroyed and the abscess is deep, some traumatism is necessary. But the question is, how can you produce the least and secure the results? I do not believe it is by packing the abscess and putting in a drainage tube. The circulatory movements of the brain during an infection are quite marked. Nor do I believe in irrigation. I have failed to see a case recover, and my friends have not been able to tell me of any case of brain abscess that recovered after frequent irrigation. But I do suggest the use of Dakin's solution, which does two things—it sterilizes the abscess and it does produce a little stiffening of the brain. It hardens the brain tissue in the neighborhood of the abscess and renders less likely the extension of the infection into the cavity, and it seems to me gives the patient a better chance for recovery. I prefer to use the encephaloscope rather than to put a drainage tube into a part of the brain that I cannot see.

DR. B. N. COLVER, Battle Creek: I was much interested in one point that Dr. Peet touched rather lightly, and that is the occurrence of brain abscess at a distance from the healing of the otitis media or meningitis. It seems to me that in these cases the chances are certainly nine to one that the infecting organism is the pneumococcus or the

streptococcus capillaris, and I would like to emphasize the importance of bacterial examination of the pus of an otitis and certainly of a mastoid process, and then if we do find these particular organisms, keeping that patient under observation for a long time, perhaps a year after the operation, so as to safeguard the case and see early indications of such a complication as brain abscess.

DR. DON M. CAMPBELL, Detroit: Brain abscess is too often looked upon as a condition merely within the cranial cavity. The fact is that we have the extra dural abscess and the sub dural abscess, either one of which is brain abscess; and then we have this collection of pus surrounded by normal brain tissue, and that is brain abscess. The surgical handling of these three different types is vastly different. There is no difficulty in handling the extra dural abscess, and not usually the subdural abscess, but it is a very different proposition to handle a true brain abscess, one that is entirely surrounded by microscopically normal brain tissue.

The point that Doctor Peet makes that this pathology should not be approached through the infected wound is absolutely well taken. As he has pointed out, the matter is not of extreme urg ncy—it is not something that must be taken care of today or tomorrow, but at a time when conditions are best and by a route that enables one to reach the abscess through a sterile wound.

The localization of an intra-cranial abscess is a thing that I believe has been a bugbear to the oral surgeons. It is not always necessary to use localization of the intra-cranial lesion in order to handle the situation in the best way for the patient. The great thing to know is whether this lesion is subtentorial or supratentorial and to relieve that which is always present—intra-cranial pressure. That can be done, if the lesion is subtentorial, by doing a sub-occipital decompression; and if the lesion is supratentorial, by a sub-temporal decompression. Then we can wait until the abscess can be definitely located. These two things are very important, for they clear up the uncertainty of an intra-cranial lesion from a surgical point of view to a great extent.

I want to hark back a little in the treatment of this disease to the prevention. We do not operate to save the hearing in otitis media, but to prevent this thing that Doctor Peet has brought to our attention. That is the viewpoint we should hold in the matter of treatment of chronic suppurative otitis media, and that is really a part of the treatment of prospective brain abscess.

DR. WILLIAM J. CASSIDY, Detroit: It seems to me that the question of brain abscess resolves itself into anatomical divisions. If you have an abscess of the chest that involves the pleura, you have a lung abscess. The same thing should apply to the brain. If you have an abscess involving the meninges, the dura, pia and arachnoid, you have suppurative meningitis and not brain abscess, the brain being involved simply by continuity and not directly the brain tissue itself.

The type of brain abscess which is most difficult to treat is the embolic type within the brain itself, and the other type which is between the convolutions. It is difficult at times to tell whether you have the intracerebral, or an abscess between the convolutions, and it seems to me your treatment is entirely different, depending on where the abscess is located. If you have a suppurative meningitis you should go through the suppurating area, and if you have symptoms of brain abscess and on opening the brain find practically no inflammatory process, why not simply pack a little gauze around it and wall off the dura and then go in at a later date?

Another important point it seems to me is that these patients should have local anaesthesia. As a rule they are in a fairly desperate condition, and with a general anaesthetic you very often turn the table and lose the case as a result.

As to drainage, I cannot get the idea of Doctor Canfield, for this reason, that the brain normally lies against hard bones, and I cannot see why a rubber tube will do any harm. It is being pounded against the skull every day and it does not seem to be harmed. Why would a little soft rubber tube create such a lot of trouble? It is simply a matter of opinion.

The question of infection varies. Sometimes the abscesses have a terrific odor.

Some of these cases go on for a long time and you do not know it until you discover it accidentally. The patient does not have any increase of intra-cranial pressure. Sometimes the brain is normal, the dura is smooth with the normal amount of fluid on the outside, but find there is a disturbance in the veins and a little exudate, and that is about the only indication you have of abscess underneath. The whole prablem is to treat the individual case as you find it. They do not all get well, even after you do drain them; they will recur, and you are up against it in an area that is almost impossible to drain.

DR. J. H. WOOD, Detroit: I wish to make a suggestion in regard to another antiseptic, that is, the succinic dioxid introduced at Ann Arbor fifteen years ago. This antiseptic has the advantage of being equal in its germicidal power to other antiseptics; it is less irritating than Dakin's solution by a very wide margin. Whether there is any advantage in the hardening effect that Doctor Canfield spoke about it is not altogether certain. The succinic dioxid has the advantage of making no inroads on the tissues whatever, it is non-irritating and can be used without fear of any particular action on the cells.

DR. LEO C. DONNELLY, Detroit: If you push a proctoscope into the brain and treat an abscess and swab it out with Dakin's solution, you cannot pass quartz crystals along the same tract. The ultra violet rays will go direct to the quartz crystals. The ultra violet ray will do from four to eight times as much good in treating the abscess as Dakins solution. I have had about five or six years of treating septic wounds. I can do about four times as much good with the ultra violet ray as with Dakin's.

DR. MAX PEET, Ann Arbor, (closing): Frankly, my associations with Doctor Canfield have been extremely pleasant, and I actually hesitate to give my objections to the encephaloscope—really a proctoscope—because of these pleasant relations.

As far as the rubber tube is concerned, any brain abscesses we have opened had sufficient oedema around them so there was no pulsation. In those we have drained the rubber tube did not pulsate. It was a very soft rubber tube, and instead of using it straight, I cut it spirally—it is just like a spring. I still disagree with Doctor Canfield, but possibly as time goes on one or the other will find something better. I have no objection to his using his method. I do know he puts this scope in gently and others would do it roughly, and I think that may make the difference between the rubber tube and the encephaloscope.

My chief objection to the encephaloscope and then packing it until the next day is the condition we have in the abscess—in abscesses anywhere. The rule is to keep the drainage open for fear of back pressure. I have seen brain abscesses that filled up and I have seen them opened below, and every time you opened them there was a gush from the pressure. It seems to me that the traumatism from the rubber tube would not do as much harm as damming back that pus. We have used the Dakin solution in practically every case, not only because of its sterilizing effect, but because in many of these abscesses there is more or less exudate, and Dakin's solution certainly does have a tendency to liquefy.

Irrigation I do not believe in at all. On the other hand, if we have a very large amount of thick pus very careful irrigation without pressure, usually allowing it to run out, does clear up a large amount of tissue.

Doctor Wood spoke of local anaesthesia. I have used it sometimes, and sometimes I have operated without anaesthesia. My experience has been that everyone of these cases die. I have never operated on a brain tumor that the patient did not die. You

can do almost any operation under local anaesthesia with a minimum of pain. After you cut through the plate they complain a little. If I have a nervous patient it makes me nervous to work under local anaesthesia, so I prefer a light ether anaesthesia. I do not like gas if I can help it. People who have had pneumonia or something of that kind, where there is a contra-indication for ether. I have used nitrous oxid, but there is always the probability of increasing the pressure within the brain. I have never tried the violet rays. If they really sterilize the cavity I would be very enthusiastic.

LABYRINTHITIS—SECONDARY TO SUPPURATIVE OTITIS MEDIA

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It is not my intention to enter into a long, technical discussion on the various phases of labyrinthitis, but rather to confine myself to that phase which is due to suppurative otitis media and mastoiditis.

Labyrinthitis, due to these causes, has been divided into four classes in the order of frequency in which they are met.

1. Diffuse Suppurative.
2. Circumscribed Suppurative.
3. Diffuse Serous.
4. Peri.

The invasion of the labyrinth usually begins with sudden loss of hearing and distressing vertigo which may be accompanied by nausea and vomiting. The vomiting is often persistent during the first day or two. Spontaneous nystagmus with quick movement toward the sound ear which is increased when the eye is turned in the direction of the quick movement. The vertigo is of a rotary type and is changed by the position of the patient. If standing, the patient finds that objects rotate around him. If he lies on his back, the objects assume more of the horizontal. Ataxia—Patient falls toward the diseased ear, that is to say, he falls in the opposite direction to the nystagmus. Pass pointing is invariably present during the active stage of vestibular irritation.

In making a diagnosis as to which class a case belongs, you will find no clear, sharp line of demarkation so that one can say with certainty this is a case of Diffuse Suppurative Labyrinthitis or otherwise. You will far too often find that a case which seems on the first examination to be a Peri Labyrinthitis, will in a short time appear to be a diffuse suppurative and when you have operated, you may find that it is really a case of circumscribed suppurative. And your diagnosis in each case may have been correct, for there is such an overlapping of symptoms, such a running of one into another in the four classes, that the correct placing of a case in its proper class will be more a question of luck than of skill in diagnosing.

SUPPURATIVE LABYRINTHITIS

Suppurative labyrinthitis is one of the most dangerous lesions of the ear. It is, as a rule, secondary to purulent inflammation of the middle ear or mastoid. Some authorities claim that the infection may reach the labyrinth directly through the blood vessels, but I cannot accept this since there is no free anastomosis between the vessels of the middle ear and those of the labyrinth.

Infection of the labyrinth is often caused by erosion of the bone of the labyrinth wall, producing labyrinth fistula. The point of attack in the order of frequency is:

1. The Horizontal Canal.
2. The Oval Window.
3. Some point on the promitory.

Right here, I wish to emphasize the fact that injury to the region of the oval window due to careless surgery in the radical mastoid operation is more often the cause of an infected labyrinth than is generally recognized. The infection from a surgical injury to the oval window region spreads with incredible rapidity to the brain and meninges.

In cases of middle ear disease, where cholesteatome is present, there is much more danger of the extension of the inflammation to the labyrinth. This may be accounted for by the blocking of the discharge by the cholesteatome and in my opinion, where this condition exists, a radical mastoid operation is indicated without delay.

During the past year, there have been a number of cases of meningitis which can be attributed to acute mastoiditis, although I have heard the claim advanced that the mastoiditis and the meningitis were engendered simultaneously. These cases were the aftermath of the flue. Many times there were no visible symptoms of mastoid involvement and it was the X-ray that showed the trouble. In other cases neither symptoms nor X-ray indicated mastoid trouble. In still other cases, the only difficulty seemed to be in stopping the discharge, which refused to yield to treatment, either increased or remained stationary, but there was an extension of the disease to the labyrinth. The outstanding feature of these cases was the rapidity with which the disease of the middle ear extended to the mastoid and the equal rapidity with which the mastoid cells broke down, even with free drainage. This would indicate an infection of extraordinary virulence.

In my judgment, based on cases I have seen, in cases of this kind, we should not wait for the development of positive symptoms, but at

as early a time as possible, do a simple mastoid operation and thus prevent the infection spreading to the labyrinth. Delay in operating in these cases of virulent infection may leave the way open to meningitis.

CIRCUMSCRIBED SUPPURATIVE LABYRINTHITIS

Those cases of labyrinthitis caused by necrosis, producing fistula of the semi-circular canals offer much more favorable prognosis that those coming from infection through the oval or round window or through the promitory, which fact warns us against careless surgery in the neighborhood of the stapes and oval window.

Circumscribed labyrinthitis occurs, when the semi-circular canals are involved and, as a rule, when the condition is due to fistula. This is explained by the fact that it is a gradual process with more or less sub acute inflammation, thus allowing time for inflammatory adhesions to form and block off the extension of the suppuration. I have often found, on operation, a fistula of the semi-circular canal, when the examination gave no positive test. The exudate or granulations may cover and block the opening sufficiently so as to prevent enough pressure being brought on the canal to give a positive sign. Circumscribed labyrinthitis, in my opinion, never occurs, when the infection takes place through the window or cochlear and infection from these sources always means a diffuse labyrinthitis.

DIFFUSE SEROUS LABYRINTHITIS

Diffuse serous labyrinthitis cannot be diagnosed during the acute stage from that of diffuse suppurative. The symptoms are identical. It can only be classified in its later stages, where it differs from the suppurative form in that while in the suppurative, there is complete paralysis of the vestibular apparatus, in the diffuse serous, the vestibular and cochlear functions may return wholly or in part.

PERI-LABYRINTHITIS

Perilabyrinthitis is a word used to describe those cases in which an inter labyrinthine congestion is produced by inflammation of the bone structure, surrounding the labyrinth. This condition may develop into a diffuse suppurative—a circumscribed suppurative or a diffuse serous. All four classes show identical symptoms with this single difference that in the case of perilabyrinthitis, the symptoms take a much milder form. As ear conditions improve, the hearing and vestibular reactions return and may come back to normal. Should there be no intercranial complications, the disease runs a characteristic course—vestibular irritation subsides after four or five days, the temperature which never rises above 103 lowers with the vestibular improvement.

I wish to call your attention to a few tests that are quite important in the differential diagnosis of physiological nystagmus and vestibular nystagmus. Irritation of a single semi-circular canal produces nystagmus only in its own plane. In acute suppurative labyrinth disease, the invasion almost invariably involves all of the semi-circular canals and cochlear, so that the nystagmus rarely corresponds to the plane of any single canal, but is rotary in character. This point is of great help in determining whether we have a condition due to pressure or one of inflammatory invasion. If due to pressure, the nystagmus is in one plane, while in suppurative invasion, more than one of the three semi-circular canals is always involved, and the nystagmus will be rotary in character.

Physiological nystagmus has also a rotary character, but can be easily differentiated from the nystagmus of labrythinic disease. Physiological nystagmus is present, when the eyes are turned strongly to one or the other lateral directions, but it changes its direction according to the position of the eyes and is unaccompanied by any subjective symptoms. Spontaneous nystagmus due to labyrinth inflammation in the most active stage is constant, it is exaggerated, when the eyes are turned in the direction of the quick movement. It is present in any position the eyes are in, it is increased, when the eyes are turned toward the quick component and in active stage is accompanied by vertigo and ataxia.

The vertigo and ataxia of labyrinth disturbance is always accompanied by some spontaneous nystagmus and is increased, when eyes are turned in the direction of the quick movement. They are also influenced by the position of the head. When we have vertigo, not accompanied by nystagmus and not influenced by the position of the head, it is not likely to be the result of vestibular irritation.

The use of the caloric test, on the diseased ear may do harm and I cannot see that it is of any special use in diagnosis, when the general symptoms are as marked as they are in acute labyrinthitis. When the vestibular symptoms subside and the disease lapses into a quiescent stage, then the turning and the caloric tests will help in making a positive diagnosis.

Some believe that the immediate labyrinth operation is warranted, as soon as labyrinth disease is diagnosed, while others are more conservative and advise waiting. Cases resulting from surgical injury, as a rule, require immediate attention, as infection admitted in this way spreads very rapidly. In my judgment,

no patient with a diffuse suppurative labyrinthitis should be subjected to operation, without a complete radical and labyrinth operation. In case of fistula, many patients are relieved by the radical operation without touching the labyrinth. Radical operations, especially where there are labyrinth involvements, call for the utmost care. There should be no jarring, for even with the lightest hand, there is great danger of converting a congestion of the labyrinth into an acute inflammatory process.

The history of four cases which I submit herewith will emphasize the points I have tried to make.

CASE No. 1—MASTOIDITIS WITH ACUTE DIFFUSE SUPPURATIVE LABYRINTHITIS

C. S. H. Male, aged 60 years. Saw the case Feb. 1917. Patient had been suffering from severe pain in the left ear for two days. Complained of dizziness and neusea. Spontaneous nystagmus to the right. Marked bulging of tympanic membrane. Slight tenderness over mastoid. Temperature 100 3-5. Normal fundi. Pupils reacted normally to light and accommodation. Paracentesis was made Bloody serous discharge under pressure. Day following operation, condition of patient much improved. Had had a good night. Free purulent discharge from left ear. Patient still complained of being dizzy. Slight spontaneous nystagmus. Hearing left ear—zero. Tuning fork—right not heard on left. X-ray showed, right, clear pneumatic cells, large lateral sinus. Left, showed partially pneumatic mastoid cells. Some evidence of infiltration. No evidence of destruction of the septa. First degree mastoid.

Patient continued to improve. Discharge gradually stopped and opening in tympanic membrane completely closed. Hearing did not return. Tests proved dead left labyrinth. Patient continued in good condition, attended to business until the last of March. Complained of severe pain in left ear, headache, nausea and vomiting. Was unable to walk without assistance. There was marked nystagmus. Eyes showed slight blurring of discs. Marked tendency to fall to left. Paracentesis made. Slight serous discharge obtained. Second X-ray showed on comparison with first, slight increase of the cloudiness in the left mastoid, indicating increase in mastoid conditions. Patient sent to hospital. Following morning showed symptoms of meningitis and blurring of outlines of disc of both eyes. Complete radical mastoid and labyrinth operation was done. Mastoid and labyrinth showed purulent infection. Patient died April 11 of purulent meningitis.

The question arises, had there been a complete radical mastoid and labyrinth operation performed at the outset (despite the lack of indications) might the meningitis have been prevented? This is a case which confirms my belief that where there are indications of mastoid and labyrinth involvement, a radical operation on both without delay is indicated.

CASE No. 2—MASTOIDITIS WITH CIRCUMSCRIBED LABYRINTHITIS

J. B., male, age 30. Examined July 1919. Patient had had discharge from left ear at intervals since he was 14 years old. Large polypus removed from left ear in 1914. For past two days, patient had been suffering from severe pain, dizziness and nausea. Marked spontaneous nystagmus. Unable to walk without assistance. Right ear normal. Hearing normal. Left ear, large perforation of tympanic membrane. Granulation tissue. Foul smelling discharge. Temperature 100 2-5. Heart and lungs negative. No symptoms indicating fistula. Nystagmus increased, when patient looked to right. Hearing zero. Falls to left. Normal fundi.

Radical mastoid operation July 6. Middle ear and mastoid filled with granulation and with cholesteatome. Fistula of horizontal canal, covered with granulation. Discharged from hospital July 25. Good condition. Patient now in good condition—ear completely healed—dead left labyrinth.

In this case there were no indications of the fistula which on operation was shown.

CASE No. 3—(Peri Labyrinthitis)—CHRONIC MASTOIDITIS WITH PERI LABYRINTHITIS

D. P., age 8 years. Examined Nov. 6, 1921. Heavy discharge from right ear for past three years. Attacks of dizziness, nausea, pain in right ear for past two days. Pupils react normally to light and accommodation. Normal fundi. Nose and throat negative. Tonsils had been removed. Tongue rough and grooved. Few decayed teeth. Heart, chest and abdomen negative. Inguinal glands marked enlarged. Analysis of urine specific gravity 1015. Negative as to albumen and sugar. Wassermann negative. Slight swaying to right. Spontaneous nystagmus to left. Fistula tests negative. Hearing 0 for watch and voice. Webber to left. Reflexes normal. Ears, right, marked drooping posterior wall. Large perforation of lower part and small opening at upper part of tympanic membrane. Foul smelling discharge. Tuning fork to left. No tenderness over mastoid. Hearing left ear normal.

Radical mastoid operation performed Nov. 26. All cells filled with pus and granulations. No exposure of lateral sinus or dura. Marked necrosis of bone about semi-circular canals. No fistula found. Culture, no growth. Discharged Jan. 26, 1922. Complete recovery made. Tuning fork to right and labyrinth tests give normal reaction. Hearing moderate, loud voice at 5 ft.

DISCUSSION

DR. B. N. COLVER, Battle Creek: In recent statistics it was found that in 96 cases only 81 came from chronic otitis, 10 from subacute, and 5 from acute. It would seem therefore that the type is diffuse suppurative and that there probably is no true suppurative localized variety except following chronic cases. In other words, the acute conditions are diffuse rather than localized. Of course the diagnosis of any type is not easy at the beginning; you can tell better after it is over what you did have.

The question when to operate is certainly very important. It seems to me the conclusion drawn by the Doctor in his paper that operation on the labyrinth is only indicated when we have intraocular symptoms rather than labytinthine symptoms is correct. An operation has been suggested for acute suppurative labyrinthitis, especially those cases that are postoperative, where owing to traumatism the infection passes through the labyrinth and internal auditary canal. This is to pass straight through the internal auditory canal and in that way get wide drainage of the submeningeal spaces. It is much more simple than the Neumann operation, the only objection being that the seventh nerve is practically always destroyed; but in those cases it is of course a question of life or death.

DR. GEORGE E. FROTHINGHAM, (closing): I do not feel that the caloric test is necessary in the diagnosis of the acute type of case. I think it often does more harm than good.

THE PROTECTION OF HEALTH THROUGH PERIODIC MEDICAL EXAMINATIONS*

HAVEN EMERSON, M. D.
NEW YORK CITY

For the past several years it has been increasingly evident that a limit in the effectiveness of the public and private agencies dealing with preventive medicine was approaching and it is now appropriate to consider more particularly the ways in which the practitioners of medicine can make their next important contribution. The subject of the discussion I would offer you is the protection of health through periodic medical examinations.

In the subway cars in New York one may read the following advertisement: "Your body is a wonderful machine. You own and operate it. You can't buy new lungs and heart when your own are worn out. Let a doctor overhaul you once a year." This was issued by the Queen's County Tuberculosis Association.

The following resolution was passed by the House of Delegates of the American Medical Association in St. Louis:

"Whereas, the value of periodic medical examination of persons supposedly in health is increasingly appreciated by the public, it is recommended by the Council on Health and Public Instruction that the House of Delegates authorize the Council to prepare suitable forms for such examinations and to publish them in the Journal of the American Medical Association, and that the county medical societies be encouraged to make public announcement that their members are prepared and ready to conduct such examinations, it being understood that the indigent only shall be examined free of charge and that all others are expected to pay for such examination."

Still other resolutions of similar nature come from the Rotary Clubs:

"Resolved, That this 1922 Conference of the Rotary Clubs of the Third District in session at Trenton, N. J., hereby respectfully request the Board of Directors of the International Association of Rotary Clubs to recommend that all Rotary Clubs make earnest endeavors to see that adequate provision is made for the early physical and mental examination of the boys whom their boys' work committees serve, and for the proper treatment of the physical and mental defects found."

"Resolved, That this 1922 Conference of the Rotary Clubs of the Third District in session at Trenton, N. J., hereby respectfully requests the Board of Directors of the International Association to designate the first week in October, 1922, as International Rotary Health Week and ask that every Rotary Club devote its meeting that week to a report of the extent, the need for the earlier diagnosis of and the public and private measures that may be taken to lessen materially the increase in the Diseases of Adult Life that cause the death of so large a number of Rotarians every year."

The National Health Council (including in its membership the eleven most influential volunteer public health agencies) has arranged for a special health program on December 8, 9 and 10 of this year, to spread throughout the country knowledge of the value and necessity of the periodic examination of healthy people by their private physicians.

Let us consider what has been happening to bring all this about, what we are at present doing in the way of applying in medical practice the principles suggested, and wherein lies the opportunity to meet the public's growing need, by services which the medical profession alone can provide.

I would like to call your attention to the fact that the Official Public Health Services of Nation, State and City in the past have been largely devoted to providing protection, as by control of water supply, sewage disposal, pasteurization of milk, and isolation of sick people in the communicable stage of disease. They have offered vaccination against smallpox and typhoid and nowadays more and more against diphtheria.

Private Health Agencies latterly have arrived at a more or less common policy, finding that the special objective of each can be reached only by a few fundamental services which depend upon early accurate medical diagnosis and the personal interest of each individual of a community or family.

Carrying the individual through the life span, let us see what measures should be, and can with advantage be put into effect. At present through baby stations and prenatal clinics, a mother is expected to come for examination not later than the fifth month of pregnancy, and the supervision of the expectant mother is carried out until the time of delivery. It has been found that the death rate for mothers from causes connected with pregnancy and child birth may be reduced 50 per cent, and that the death rate of infants from causes due to prenatal conditions can be reduced 50 per cent, while stillbirths are reduced 35 per cent by prenatal, medical and nursing supervision. Following delivery, about half of the babies that are born in the large cities are now supervised at infant welfare stations for the first year or two of their lives, and it has been largely through such education of mothers that the death rate of infants has been reduced.

We would say, then, that if we were planning a service for maternity and infancy we should wish the mother to report once every two weeks in person to her physician, or through a nurse, during the last five months of pregnancy, and bring the baby for a medical examination monthly for the first year of childhood and once a year for the first six

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years. In New York city it costs the Health Department about $25.00 a year to provide such supervision for an infant under one year, and the Maternity Center Association about $15.00 to give proper prenatal supervision to an expectant mother.

What happens between two years and school age? But a small fraction of the children receiving health supervision up to the age of two have an annual medical examination between two and six, so that parents may learn what has happened to their children, as they have passed through the various sicknesses of this particularly vulnerable period of life. The highest death rate from the acute communicable diseases of childhood occurs between two and five. We have usually considered this a time of freedom from supervision, but we are paying the penalty by having children arrive at school age commonly suffering from undetected or unremedied defects, many of them sequellae of minor infections. We find them in a condition unfit to attend school. We require them to attend school, but they are often not fit to learn until their physical defects have been remedied. At school there is often provided at least an annual inspection if not a complete examination. Between the ages of six and sixteen, school children generally have a medical examination at least three times, and more frequently a brief inspection carried out by nurses to detect the minor defects of development, nutrition, and infection. There would be no need of this supervision by the school service or health authorities if each school child were taken annually to his family physician and the defects discovered and corrected under his direction.

You will recall that the laws of some states require children entering industry to be free from certain serious physical and mental defects. They must have their sight and hearing, heart and lungs in reasonably good condition to spare them the dangers that occur in many trades and factories. These examinations for working papers for children under sixteen wishing to enter industry serve a useful protective purpose. Public service and often private employment requires an entrance medical examination and some times an annual re-examination of all employees. After the age of forty-five it is more and more a custom to have an annual medical examination, and not only among those who wish to obtain insurance policies. Many people who have had some warning of disability, the diabetic, the obese, those with high blood pressure, women during the menopause, not uncommonly consult a physician once a year for a comprehensive examination and guidance in the manner of life, but this group is still extremely small.

In the aggregate those who receive some periodic preventive medical supervision represent a considerable proportion of the population. Tse large dragnet of life insurance examinations discloses the need for more frequent medical examination of adults. Similarly the annual medical examinations in the army and navy indicate the extent of remediable defects which are commonly overlooked and their correction neglected.

Organized labor has prepared to meet just exactly this need. One instance is the joint Board of Sanitary Control in New York which has representatives from all the needle trades and provides for a medical examination of all their members once a year. They find that their greatest difficulty and cause of loss to wage earners is sickness that can be prevented by proper medical examination and advice. Two important experiments in a general public service of periodic examinations of those apparently in health have been undertaken by the Boston Dispensary and by the Academy of Medicine of New York. Of the first four hundred presumably healthy people who passed through the hands of the physicians of the Boston dispensary, 77 per cent were found defective in some way. The applicants believed they were in perfect health, but thought there would be an advantage in having a medical opinion to that effect, or their conviction confirmed as to their state of health. These people were all of the working class, in moderate circumstances and their livelihood depends entirely upon their health. There were found 77 per cent with defects of such degree as would limit their life or health span, or bring them to the class of dependents at an early age. The defects discovered were what one might expect—tuberculosis most common, cardiac disease next in frequency, malnutrition and serious defects in digestion being among the other large group.

The New York Academy of Medicine through its dispensary development committee, started three small stations, entirely apart from dispensaries, for health examinations. The first four hundred applicants showed the following. Only 6.4 per cent of the people who applied were found to be free from gross physical defect of important degree sufficient to interfere with wage earning. 19.7 per cent showed evidence of some active infectious disease, tuberculosis, venereal disease, rheumatic infections or secondary involvement of the heart. Fourteen per cent showed constitutional defects, malnutrition, excess or de-

ficiency. Nineteen per cent showed vasomotor and chronic cardiac disease; 83.9 per cent showed digestive and dental defects. Forty-nine cases among the first four hundred showed an extreme and chronic constipation, most of whom can be relieved by correction of errors of hygiene, diet, exercise and the use of water. Twelve and a half per cent had defects of vision; 6.5 pr cent showed defects due to errors of function of the ductless glands. Here is a great mass of undetected serious diseases and defects in people who were living lives that they would say were healthy and normal simply because they have not been sick enough to go to bed, and do not know what health is, and were never accustomed to go to a physician unless something caused them pain or stopped their work. It is to search out these submerged disabling sicknesses that we are aiming. These people are not frightened by being told of these disabilities. They appreciate a thorough medical examination. They take pains to follow advice, and they show prompt benefit as a rule. Very rarely do we find among these applicants any who have had an examination of the heart and lungs upon the uncovered body. They have been treated generally after incomplete medical examination—upon symptomatology alone rather than after history and physical examination. The rule practised at these examining stations is that all examinations shall be at least as thorough as if we were seeking for disease. We are seeking for health and variations from it. We wish to learn if those who apply are as free from disease as they innocently believe and hope.

What does this all cost? Up to the present it has been found impossible to provide this service by competent physicians for less than $5.35 a patient. There is the room for equipment, with sufficient light, warmth and quiet, there is the physician and what he carries in his kit bag, the few instruments of precision for examination of the body orifices and the special senses. Sight is tested by the Snellen chart, hearing by the watch test, blood pressure is recorded. The urine is tested for sugar, albumin, reaction and specific gravity. The time for each examination is between forty-five minutes and an hour. This includes the time necessary to verify the patient's statements in the history, and to make sure the patient understands the advice given and the reasons for taking action.

These are not clinics. They are not equipped for treatment of disease. They are examining stations for the recognition of disorders of structure or function which are significant causes of disease.

Up to the present time we physicians have been sought by the public; the public has come to use and said, "I have a pain, an ache or a bleeding. I have some incapacity or weakness. Will you please set me right? Or, they will say, "I am lame; I am blind, or I have a fever." They come with a specific complaint and ask to be made themselves again. We have awaited only the appeal of those who recognize that there is something wrong. We cannot meet our obligations and opportunities and do only this. The public has been shown the economic necessity, the financial advantage, the personal safety, that comes from knowing whether they are as healthy as they believe themselves to be. They are beginning to realize that if a physician is worth his salt, he should be able to recognize the evidence of sickness long before a non-medical person can do so. If not, why do we claim ability to detect tuberculosis at so early a stage that we can save most of the cases? We have made advances in the education of the public in tuberculosis until patients recognize the importance to themselves of loss of weight, persistent indigestion, colds, coughs and unexplained languor and malaise. People already come in large numbers to clinics for examination on appearance of suspicious symptions. About 70 per cent of patients examined at the tuberculosis clinics in New York city are found not to be suffering from tuberculosis.

The student and physician have very little opportunity, except in insurance work, to separate the presumably healthy with no subjective symptoms from the obviously sick who are complaining of difficulty or discomfort. It seems to me, we have got to accept the public's growing demand for service; we should cultivate it, prepare for it, and supply it. The detal profession has gone far in this direction and with great benefit to their patients. They urge and practice annual or semi-annual routine cleansing and inspection of the teeth of their clients. There are very few people of any means who do not go at least for cosmetic purposes to dentists to have their teeth cleaned once or twice a year. There is much of economy and prevention in the custom. We do not hang our lungs on our coat sleeve; therefore, if they are diseased they are not obviously offensive. There are a good many kinds of dysfunction, of error in growth and structure which develop insidiously, but are easily detected if looked for and easily observed by some one alert to catch the early signs of disease. We should teach all people the value of calling on their family physician once a year for examination, however healthy they may believe themselves to be. We stated the need of a room for examination in every dispensary. I should like to see in each hos-

pital out patient service, or dispensary for diseases of the eye, ear, nose and throat, for general medicine and surgery, a room devoted to the diagnosis and protection of health.

It seems to me that the possibilities of administrative protection of community health have very largely reached their greatest results. I believe that preventive medicine of the future will come through the individual who personally selects a physician to see him as a patient. If a patient is not persuaded that his doctor has confidence in and believes in preventive medicine and will succeed better in keeping him healthy than by treating him when he is sick, we can hardly expect the public to pay out their good money to have a health officer give an impersonal service to the community as a whole.

It is the aim of the broad physician at present to encourage, to teach and develop in his own practice the habit of appointment for health examinations. Apparently healthy people generally need instruction as to the physiology of the human body, how to get along without the use of drugs; to cultivate the habit of regular bowel movements; how the child is going to increase in weight by living a child's life instead of the life of an adult. It needs more keenness and diagnostic skill to detect sickness of a grade unnoticed by the average individual than to name a disease which has already declared itself by manifest symptoms.

Evaluation of the degree of health and the teaching of health habits are as much the serious function of the practicing physician as is the treatment of disease. That is one of their responsibilities. You must see that the indigent as well as the well-to-do have this service. No physician in the United States declines to care for the needy in time of sickness. I propose to you that you will have much less to do in caring for the sick and dependent if you provide for them professional services to protect them against sickness.

Do you remember the story of the little boy at the public school who went to the principal and said, "Ain't I sick enough to get into the open air class?" Truly a child has to be pretty sick to get into the fresh air in our schools. If they are well they are expected to tolerate vitiated mechanically served air. If they begin to get peaked and look sick they may be selected for the privileges of a fresh air class. That is what we are permitting for many of our patients—we say, "When you are sicker so that you yourself are aware of it, I will take care of you." We are just waiting for the patient to say, "I cannot stand it any longer, you will have to do something for me." We must reach those who are going to be sick unless we warn them of the minor evidences of disease and prevail upon them to adjust their manner of living to the indications.

Ask the members of your State Medical Association to note the number of patients to whom they have said, "I am sorry; if you had come three months ago, I could have surely cured you, and easily, but now it is too late to cure and the time of treatment will be long. If you had come when you had your first cough I would not have had to send you to a sanitarium for the treatment of advanced tuberculosis." "If you had come when you had early syphilis before there was evidence of paresis or central nervous system involvement, I could have done something for you." "If you had come when you first noticed the lump in your breast I should have been able to do something for what is now an incurable cancer already spread to distant tissues." Why do we wait for people to have polyuria weakness and loss of weight to find out that they have sugar in the urine?

These are the objectives that we have put before ourselves at the examining stations in New York:

1. To make medical examinations of persons of obviously ill, yet desirous of learning how to maintain their health or to increase their well being.

2. On the basis of the examination, where disease conditions are found, to direct the examinee to suitable treatment resources.

3. In each case not requiring definite treatment, to give detailed instruction in writing on needed modifications in modes of living.

Now, may I emphasize this "in writing?" The person suffering from acute pain will do what you tell him to do because he can't go on suffering that pain. But when you are dealing with an error of habit, a still mild and hardly offending error of nutrition, and your advice deals with the whole manner of living, exercise, diet, recreation, occupation, and you have to put into his hands some specific written directions as to what he is to do. Be precise in your directions and tell the patients just what they are to do and write it down so that they can read it over.

4. To supplement dispensary clinics by guiding patients not requiring medical treatment in modes of healthy living.

The nature of the work is, first, *general medical examination.* These examinations are fundamentally like those in the general medical clinic, but examinees receive in addition elementary sight and hearing tests and posture analysis. Proportional measurements are taken and muscle tests are made.

The attitude of the physician making the examination is one of making an appraisal of

health and vital capacities, rather than seeking only causes of special symptoms.

Second, the *instructions to the applicant*: The instructions include an interpretation of his physical condition and detailed suggestions as to needed modifications in his mode of living. This relates to his habits of personal cleanliness, his diet, his recreation, his exercise, his work, his interests and his rest.

As the instructions are not given to tide over some disease emergency, but serve as a basis for development, they must be in writing so that the applicant can give them careful reconsideration from time to time.

The mental attitude of the applicant toward medical service in coming to the health clinic is frequently the main difference in the selection of the case for this, instead of referring him to the general medical clinic. Physically he may be very like cases under care in a treatment clinic, but his approach to his health situation is one of seeking an understanding of his own condition as a basis for the conduct of his life rather than the acceptance of directions limited to the relief of some special condition.

The approach of the doctor in giving these directions is that of instruction and persuasion, rather than that of issuing definite commands which the actual presence of illness makes necessary.

The health clinic should be related to the department of general medicine in the same way as are the departments of the various clinical specialties.

I have this one appeal to make to you as physicians and that is that you will not be satisfied in the future as the majority of medical practitioners have been in the past who sit in their offices and wait until the people come with complaints and symptoms asking for treatment. It is time that the profession as a whole took pains to inform the public that a preventive service awaits them, as valuable as, and more certain than the service rendered to the sick. I see no reason why the county societies should not give public notice that their practitioners would prefer to prevent disease than to cure it. That it takes a higher degree of diagnostic acumen to recognize the early stages of disease than it does to put a label on a perfectly obvious clinical picture of sickness.

It is time that the general practitioner of medicine stimulated interest in periodic medical examinations on the part of his own patients so that he may practice preventive medicine, by the use of his own diagnostic skill, in his own private office.

It should be the aim of the practitioner of medicine at present to encourage in his own patients, and teach them to adopt, the habit of an annual medical examination, with sufficient leisure for a careful consideration of the manner of the patients' lives and the adjustments that are required to develop better health, or at least to maintain it. On the whole the attitude of physicians towards disease, its detection and treatment has crowded out of their minds the capacity and habit of studying individuals to learn what are the variations from health from which they suffer and how health may be more complete and better safeguarded. The physiological point of view of the practicing physician has been sacrificed in the search for pathological explanation of conditions which have already been of sufficient degree to annoy the patient or rouse his fear of incapacitating sickness or even of death.

It is believed that medical schools, hospitals and dispensaries should offer opportunities to physicians to train themselves in what may well be called health examinations. Few physicians as they leave medical schools and hospitals know how to teach the average child or adult the simple laws of personal hygiene upon which the acquisition and maintenance of health depend.

With the constant reduction in disease as the result of the application of preventive medicine throughout the country, diminution in income of physicians from the care of the sick should be supplemented by the practice, more constructive and equally profitable to both patient and physician, of preventive medicine through the health diagnosis and hygienic advice.

I beg of you as a means of applying preventive medicine, as a means of giving better service to the community, to advertise the periodic medical examination of people who are presumably well, and to tell the people that it is as well worth paying for, as to pay for preventable sickness, and that you are capable of doing it; that the one best prepared to give health advice is the physician who knows the individual in sickness and in health year in and year out.

The place for the practice of preventive medicine is in the home, in the office of the family physician, and as the result of the same precise diagnosis in each individual case as is devoted to the diagnosis and treatment of disease.

PUBLIC HEALTH EDUCATION

The function of the Joint Committee representing the University of Michigan and the Michigan State Medical Society is to present to the public the fundamental facts of modern scientific medicine for the purpose of building up a sound public opinion concerning questions of public and private health. It is concerned in bringing the truth to the people, not in supporting or attacking any school, sect, or theory of medical practice. It will send out teachers, not advocates.

VII.—PHYSICAL EXAMINATIONS (Continued)

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"GET YOURSELF EXAMINED." "LOOK FOR YOUR DANGER SIGNALS."

Under these impressively warning captions the Life Extension Institute, under the able direction of Doctor Eugene Lyman Fisk, is carrying on its campaign for periodic physical examinations—the annual overhauling.

"Don't just shut your eyes and try to ride past them. The time to begin looking for danger signals is before the serious trouble happens. In most cases there are caution signals long in advance of the dangerous disease. The earlier these warnings are noted—and given attention—the longer, more comfortable and more useful your life journey will be," is the admonition of Doctor Fisk.

Up to the present time the Life Extension Institute has made approximately 225,000 physical examinations and the proportion of defects found in adults correspond to those tabulated in the previous issue of The Journal. The striking revelations of these physical examinations are that less than two per cent of all examined passed a perfect physical examination, and that ninety-eight per cent were found imperfect. These imperfections were graded into three groups—seriously affected, moderately affected and slightly affected. Furthermore, it must be borne in mind that approximately eighty per cent were not aware of the fact that they had defects. And precisely here comes in the inestimable value of the annual overhauling. Catch these non-cognoscible, slow-going, retrogressive or degenerative changes before they have reached the irreparable stages. This can be done only through periodic physical examinations.

Quoting from the Institute's excellent pamphlet, "The Possibilities of Hygiene:"

"There are few persons in America today who reach the age of forty sound and normal in every part of the body, especially if we include among abnormalities the minor ailments. The extent to which minor ills are prevalent among those who pass for 'well' people is not generally appreciated.

"Once we penetrate beneath conventional acquaintance we almost invariably learn of some functional trouble, such as impairment of heart, circulation, liver, kidneys, stomach; or gall-stones, constipation, diarrhea, or insomnia, neurasthenia, neuritis, neuralgia, sick headaches, or tonsillitis, bronchitis, hay fever, catarrh, grippe, colds, sore throat; or rupture, enlarged glands, skin eruptions; or rheumatism, lumbago, gout, obesity; or decayed teeth, baldness, deafness, eye ailments, spinal curvature, flat foot, lameness; or sundry other 'troubles.'

"These ailments, though regarded as 'minor,' should be recognized promptly and accepted as the signal that the person is moving in the wrong direction. There is no need for alarm provided this warning is heeded. Otherwise disaster is almost certain sooner or later to follow. The laws of physiology are just as inexorable as the laws of physics. There is no compromising with nature. No man can disobey the laws of health to which he has been bred by nature without paying for it—any more than a man can sign a check against his bank account without reducing the amount. He may be immediately bankrupt, and until he exhausts his account he may not experience any inconvenience from his great extravagance, but nature keeps her balance very accurately, and in the end all claims must be paid.

"The menace to the individual from insanitary conditions in his own body is far greater than from insanitary conditions in his community.

"Preceding most serious illnesses there is usually a long period of impairment. This breaking-down is frequently so slow and insidious that you do not realize its danger until well advanced, but from the very beginning it leaves signs that science can detect.

"There are thousands of people gradually drifting into chronic so-called incurable diseases. A man's whole future, and that of his family, may be

changed by the simple elementary precaution of a frequent, careful physical survey; a form of inspection which a man neglects for himself, but carefully applies to all important man-made machines."

DISEASES OF ADULT LIFE AND MIDDLE AGE

Every effort must be made, on the part of those interested in the health and welfare of the public, to promote adult hygiene. Already industry has discovered that human conservation among its employes is vastly more important than machine conservation. Hence, industrial hygiene has made rapid strides in our country. This program of the wage earners conservation must be expanded to include all adults, for it is the adult mid-period of life that is of greatest value to society and to our nation. The death rate at forty is nearly three times what it is at twenty. Regarding the diseases of this important mid-period, let us again quote from Fisk:

"Medical men and sanitarians derive more comfort from studying the death rates and vital statistics relating to infancy, adolescence, and early adult life, than from those showing the trend of mortality in middle life and old age. In the earlier periods of life tremendous gains in vitality have been made in the past quarter century. Trench after trench has been taken from such malignant enemies of childhood and youth as diphtheria, diarrheal diseases, typhoid fever, tuberculosis and even pneumonia, long a stubborn fighter. The lines of these foes have been steadily pushed backward, and their ultimate control seems probable.

"From full maturity to old age, death is chiefly caused by the breaking down or wearing out of the vital organs. Heart disease, apoplexy, paralysis, Bright's disease of the kidney, and cancer, are the enemies of middle life and old age. It is well known that cancer is on the increase, but not so well known that the death rate from diseases of the heart, blood vessels and kidneys has also heavily increased in this country during the past thirty years. In 1918, between the ages of 30 to 60, there were 124,000 deaths in the United States registration area from these degenerative affections, exclusive of cancer.

"This means that for the country at large, there is an annual loss of more than 150,000 citizens in the prime of life. That most of these deaths were premature and that 50 per cent of them could have been postponed many years by early warning and guidance is a conservative estimate.

"Against this class of disease, modern science has as yet waged no systematic and persistent warfare. The lines of attack are not so simple and direct as in the infectious and epidemic maladies. We cannot vaccinate an individual against heart disease, thickening of the blood vessels, or kidney trouble. To protect a man against these maladies, we must study his personal needs, and perhaps remodel his whole existence.

"Nevertheless, distinct gains can be made in combating these maladies by following certain broad general principles."

"If a man asks you 'How shall I live in order to avoid these chronic degenerative diseases,' the general answer is, 'Temperance all along the line—in eating, drinking, working, playing and even in resting.' It is possible to 'rust out' on the one hand or to 'wear out' on the other.

"But what is temperance for one man may be excess for another. Hence the most important step, in protecting against degenerative maladies, is to have a thorough physical examination at regular intervals—at least once a year—so that life may be regulated to one's physical equipment."

ECONOMIC LOSS

We must be pardoned for referring so frequently to and quoting so extensively from Doctor Fisk and the Life Extension Institute. It happens that no other health agency in the world can speak with such authority on this subject.

During the past year the Institute made a very extensive and painstaking investigation for the Committee on the Elimination of Waste in Industry of the Federated American Engineering Societies of which Mr. Herbert Hoover was president. The report emphasizes the risk a man carries in not having his body periodically examined and the prodigious economic loss resulting from this neglect.

"The economic loss in this country annually from preventable disease and death is over $3,000,000,000. $1,800,000,000 of this loss is among the gainfully employed.

"The economic loss from the tuberculosis death rate alone is $500,000,000 annually and $26,000,000,000 for this generation figured on the diminished longevity.

"42,000,000 gainfully employed lose 350,000,000 days from illness disabilities and non-industrial accidents; 28,000 die from industrial accidents.

"500,000 working people die annually. At least one-half of this loss is preventable or postponable by proper medical supervision, periodic medical examination, health education and community hygiene.

"25,000,000 in the working classes have defective vision requiring correction. At least 25,000,000 have defective teeth and mouth infection; there are more than 1,000,000 with some form of tuberculosis; there are more than 8,000,000 with flat foot; more than 6,000,000 with organic diseases resulting mostly

from infection; more than 1,500,000 with venereal infection."

"These figures are derived from studies of individual groups, from insurance experience, from census records, from draft records, and there is experiential basis for the statement that this loss could be materially reduced and leave an economic balance in the working class alone over and above the cost of prevention of at least $1,000,000,000 a year."

INCREASE THE HEALTH SPAN OF LIFE

According to insurance tables upon which premiums are based no one is supposed to live beyond ninety-six years of age. The traditional span is about seventy years and the expectancy of life at birth is now fifty-one years. Those who escape and survive the early hazards of life and live to be fifty may well expect to live another twenty years. This then is the life span. Unfortunately the health span of life which is represented by a sound, active and vigorous body and exhuberant health is limited on the average to only ten years after maturity is reached. The health span, therefore, is from age twenty to thirty-one, "when the individual can tackle anything in the way of sport or work confident in his physical reserves." During the pressure of the recent war, Great Britain drew the line at forty-two for active military service. One of the objectives of Public Health should be to increase the productive health span of life from ten to twenty or even thirty years.

Our greatest instrumentality for achieving this objective is the *Annual Overhauling*.

DOES THE ANNUAL OVERHAULING PAY?

The answer is. It does. Let us quote from "The Nation's Health," on the value of periodic medical examinations.

"The most striking testimony yet offered to the value of periodic medical examinations has recently been furnished by the Metropolitan Life Insurance Company, which for more than seven years has been offering the life extension institute service without cost to its policy-holders. Approximately six thousand persons were examined under this plan in the years 1914 and 1915 and the after history of this group was observed up to November, 1920, for an average period of five and one-half years per person. The expected mortality for a group of the class and age concerned would have amounted to 303 deaths, but actually only 217 deaths occurred—a saving of 28 per cent.

"The number is small, but the difference is so marked that it cannot reasonably be attributed to chance, and the company estimates that the sum of forty thousand dollars spent in these medical examinations has effected a saving in mortality in excess of $126,000. Results of this kind should be of the greatest assistance in furthering the movement for systematic medical examination, which offers the only hope of effective control of the degenerative diseases of adult life."

This Company states that this little adventure in life saving has been a 200 per cent investment, (returns $2.00 net profit for every dollar expended).

Assuredly, this may be regarded as a splendid tip for a good safe investment on the part of the average citizen.

IMMUNIZATION AGAINST DIPHTHERIA

In reference to diphtheria, as has long been the case in the control of smallpox, the medical profession is demonstrating that its function is not alone the treatment of disease, but its prevention. For diphtheria can be prevented, just as smallpox is—and by the same means, vaccination. There are minor differences, but the principle of immunization is the same. Natural immunity to diphtheria is largely a matter of age; it is a children's disease, though not all adults are exempt. Protect the children, and you protect the community. This is done, in a measure, by the use of anti-toxin, but not completely. Why should the child be allowed to take any chances at all? No one can foretell the virulence of a diphtheritic attack, and in waiting for developments a case of "sore throat" may turn out to be malignant diphtheria challenging even heroic doses of antitoxin to subdue it, or ending the life of the patient through delay and temporizing treatment.

Why not prevent all this when it can be prevented by the systematic application of the toxin-antitoxin mixture known as diphtheria prophylactic? Every physician should take an interest in this subject, we believe, and extend, so far as his influence goes, the protective barricade against the spread of diphtheria.

The standardized toxin-antitoxin mixture is supplied in packages suitable for private and institutional practice by Parke, Davis & Co., who also offer appropriate literature to inquiring physicians.

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SEPTEMBER, 1922

Editorials

MEDICAL SCHOOLS COMBINED AT OHIO STATE UNIVERSITY

Ohio State University is the last of state universities to discontinue the maintenance of a separate school of Homeopathic medicine. By action of the board of trustees on June 19th, the two medical schools at Ohio State were amalgamated. According to the action of the trustees at this meeting two separate chairs in Homeopathic medicine were to be maintained in the new combined school of medicine, similar to the new arrangement at the University of Michigan. By a subsequent action, July 11, the Board of Trustees eliminated all Homeopathic teaching, thereby abolishing the proposed two chairs established at their previous meeting of June 19th.

No independent Homeopathic medical schools now are to be found in connection with universities. Only three independent Homeopathic institutions now exist in the United States. These are the Hahnemann Medical College and Hospital of Philadelphia (Class A), the New York Homeopathic Medical College (Class B), and the Hahnemann Medical College of Chicago (Class B).

The Homeopathic Medical School at Ohio State University was endowed for certain phases of its activities. There is now some doubt as to the disposition of these funds since the combination has been affected. Especially is this true of $150,000 of General Motors Stock, given by a prominent Dayton citizen. It is thought that the funds will be returned to the donors. In view of this endowment, one may be certain that the action of the trustees at Ohio State in amalgamating the Homeopathic school with the regular school was attended with even greater difficulties than was the case at some of the other universities where the coordination of the two schools has been recently made.

In recent years the Universities of California, Iowa and Michigan have combined their Homeopathic Medical schools with the so-called regular medical schools. In these three institutions, however, separate departments or chairs are maintained in the combined medical schools for the purposes of teaching Homeopathic Materia Medica and Therapeutics, for it is along these lines that Homeopathic teachings differ materially from that in the regular medical schools.

The University of Michigan will maintain two chairs of Homeopathic materia medica and practice. Naturally, it is the desire of the regents that every opportunity be given Homeopathy to conserve and to demonstrate the truths of its particular claims relative to drug actions and to treatment. Assuredly, this arrangement will offer every opportunity for Homeopathy to prove its claims and any contributions which it has made and may make to medical truths are bound to be accepted and become standard procedures in the practice of scientific medicine. These departments will grow and flourish in so far as they demonstrate their claims and produce, through research and investigation, new scientific medical truths. Those who are convinced as to the truths and efficiency of Homeopathic medical practice need have no fear whatsoever as to the welfare of Homeopathic medicine at the University of Michigan. The truths in medicine must prevail.

Evidently the trustees at Ohio State University feel that the alleged truths of Homeopathy will survive and flourish even without the maintenance of separate chairs. They no doubt feel that in as much as the spirit of the University is truth, the truths of Homeopathy will survive and grow in the combined scientific school of medicine.

In times past, before the various sciences now making up medicine were discovered and evolved, it was but natural that several schools of medicine should have developed. Then the practice of medicine was largely empirical and as a consequence several systems of medical observances arose, chief among which were Allopathy and Homeopathy. Both of these systems served well their day. Furthermore,

both have contributed much to the advancement of the medical sciences and the truths they taught are the priceless possessions of medical practice today.

Since the origin of these two schools of medical thought and observances, one by one, the medical sciences have been evolved. The workers in these sciences have been concerned only with finding out new truths and teaching these truths. Scientists are not biased and influenced by tradition. In no line of human interest and endeavor, is more painstaking care and observation exercised than in scientific research. One may be certain that the academic life of a scientist who is not accurate in his observations and deductions will be short indeed. No quarters are given to the pseudo-scientist. Truth alone will assure him respect and position, for truth will prevail.

The function of the university is to serve as a repository for all truths. It is the province of the university to teach these truths to succeeding generations of men and women. Furthermore, the university must through research and investigation discover and evolve new truths. In fact, the spirit of the university is search for truths.

One need not feel for a moment that as a consequence of the recent actions taken by the governing bodies of state universities in combining their medical schools into one scientific school whereby all the facilities and all the staff may be concentrated on teaching and advancing scientific medicine, that Homeopathy, Allopathy, or any other genuine system of medicine which arose during the empirical days before the medical sciences were evolved, have been annihilated. On the contrary each should be proud of its past contributions and each should feel that the truths it set forth will carry on and flourish in the new scientific schools of medicine. Medical truths there are and must be. The practice of medicine must become as scientific as is the practice of chemistry or any other science. There is no homeopathic chemistry nor can there be an allopathic physics. Likewise, there can be no differences in medical practice when medical truths are fully understood.

Let us all forget our traditional empirical differences and designations. Hereafter, let us all stand for scientific medicine. There is a vast unexplored field of medicine before us. In fact we are only at the threshold of medical truths. Assuredly, our progress in discovering these new truths and exploring this vast field will be rapid indeed when all interested in medicine will pool their efforts for the purpose of finding out and teaching medical truths.

All medical truths will survive and flourish in our universities.

CANDIDATES FOR THE LEGISLATURE

The legislature convenes in January. Legislation affecting doctors and the practice of medicine and problems pertaining to the public's health will be considered. Bills upon these topics will be introduced. Some of them will be desirable while others will be most undesirable on account of their viciousness. The cults will seek recognition and will be out in force to gain the ends they aspire to. What are you doing in your county to forestall undesired legislation?

We urge that the officers of every county society take such steps as will enable them and their members to interview candidates, obtain their opinions and views in regard to medical legislation and then support those candidates who will go on record as favoring legislation that is for the public good in the conservation and protection of the people's health welfare. This support consists of more than your vote. It means that every doctor should enter into the election campaign and work. Vigorously oppose the undesirable candidate. Vigorously support the desired candidates until the poles close. When you have secured his election then keep in touch with him and see that he remains fully informed in regard to the situations that arise and which menace you and your profession as well as the health of the people.

Such activity is imperative. The responsibility of engaging in such political activity rests upon the officers of every county society. The time is at hand when we as an organized profession must manifest our interest and record our influence to combat the schemes of those who seek to overthrow present laws and who strive for new laws designed for selfish purposes. We sincerely hope that County Officers will not be negligent in this matter. We trust that steps will be taken that will assure the election of dependable, public spirited candidates. Get busy in your county now.

SPECIALISTS FOR COMMUNITIES

The special branches of medicine and surgery require special trained men, who devote their entire time to such specialized practice. This is recognized, as essential in order that the patient may receive the greatest good and the best end results that are attainable.

While recent years have brought forth a host of specialties, there are among the number a certain few more prominent and valuable. They are orthopedics, dermatology, pediatrics, ophthalmology and oto-laryngology. The field of the latter is fairly well protected. In ortho-

pedics, pediatrics and dermatology, a dirth of properly trained men exists.

Our rural and outlying districts are ill supplied because the right kind of trained men customarily locate in our cities and medical centers and are able to secure a large practice To receive their services the patient from the outlying district must needs journey to the city. This entails many difficulties and increased expense. We believe the time has come when this should be corrected and provision made so that there is available a competent, trained man in every community. The following plan is advanced:

Let the doctors of a county or several adjoining counties, convene and determine what type of a specialist is most needed. Then let them select one from among their number and say as well as pledge to him: "If you will go and prepare yourself for this special line of work and return to this community, we will refer these cases to you and co-operate in establishing you in this specialty." Such a plan will be inducive to a progressive man and will bring to the community a type of service that is lacking.

In discussing the plan with Dr. Cabot, dean of the Medical Department of our university, he endorsed the plan. Dr. Cabot went further and stated that he would make provision to take on and train such men at Ann Arbor. Further that he would arrange that such a man would receive a living salary during his course of training at Ann Arbor. That he would be glad to take on a few such men this fall.

With such an opportunity available, we urge that the subject be given serious thought and that you survey your community with the object of securing for it specialized services in certain branches of medical practice.

SPECIAL MEETING OF THE COUNCIL

At the request of President Dodge and several members of the Council, Chairman Seeley has called a special meeting of the Council to meet in Ann Arbor at the Michigan Union at 2 P. M., on September 20, 1922. The object of this special meeting is to enter into conference with the president of the University of Michigan, the director of the University hospital, the dean of the faculty of the medical department of the University of Michigan, the chairman and members of the committee on Civic and Industrial Relationships, and the chairman and members of the committee on Legislation and Public Policy. The conference will concern itself with discussion of a proposed plan for the establishment of a Nurses' Training School in connection with the University hospital and further to give expression to the sentiments of the medical profession of the state in regard to such a plan of nurse training.

Such other business as may properly come before the Council will also be considered at this meeting.

Signed: A. L. SEELEY, Chairman.
Attested: F. C. WARNSHUIS, Secretary.

UPPER PENINSULAR MEETING

August 9th and 10th was held at Houghton, Mich., the 26th Annual Meeting of the Upper Peninsula Medical Society.

This society is in reality a District Society of our State Organization, and has been a live wire for many years. The meeting at Houghton was one of the best that has yet been held, was largely attended by its members and entertained as guests a large delegation from lower Michigan. Among the guests who participated in the program were Dean Lewis of Chicago and Guy L. Keifer of Detroit. There were also present Drs. Guy Connor and B. D. Harrison of Detroit; Dr. J. D. Brook of Grandville; Drs. C. C. Slemons and B. R. Corbus of Grand Rapids; Drs. R. M. Olin and C. C. Young of Lansing and the president of the State Society. The scientific program was most interesting, and the entertainment furnished was well up to the standard previously set by our Upper Peninsula brothers.

A banquet was tendered to the members, visitors and their ladies at the Houghton club, Wednesday evening. Dr. Jack Moore entertained the lower Peninsula delegation Thursday noon at a luncheon at his bungalow, which is beautifully located on Keeweena Bay. The ladies were entertained Wednesday afternoon at a bridge party at the Onigaming club. Thursday afternoon many members and visitors enjoyed play upon the beautiful golf links of the Portage Lake Golf club.

One circumstance marred the perfection of the meeting and lessened the pleasure of the participants. The Nestor of the Upper Peninsula Medical Society, the one among them most beloved, an ex-president of the State Society, Dr. A. I. Lawbaugh of Calumet, was known to be sick in the Presbyterian Hospital in Chicago, while Mrs. Lawbaugh was also ill in the Laurium Hospital. Flowers were sent to Mrs. Lawbaugh and the State Society President was pleased in behalf of the State Society to join with the committee in sending a message of condolence to Doctor Lawbaugh—thank him for the magnificent paper he had contributed to the program of the meeting, and wish him a speedy restoration to health.

Still another cloud hung over the meeting, it being the recollection of sudden death last

spring of Doctor Turner, a resident of the town in which the meeting was held, and who would have been now president of the State Society if he had been spared to us.

Many of the visitors made the event the occasion of an automobile tour over the beautiful roads for which "Cloverland" and the Copper Country are famous. The writer and his family returned through Wisconsin and developed much enthusiasm over the beauties presented along Wisconsin's famous state road, No. 15, which passes through some of the most beautiful cities of the state and presents a paved surface to travel from a point north of Green Bay to the city of Milwaukee.

You of the lower Peninsula who really desire to konw your state, cannot hope to do so unless you make an auto tour across the straits, see the surprising beauties of the country and meet the open handed hospitality of the medical profession you will find there.

W. T. Dodge, M. D., President.

EDUCATIONAL ADVERTISING

Upon several occasions we have commented upon the desirability of some form of educational advertising that will enlighten the public in regard to health matters and skilled medical service and which will counteract the quack claims and advertisements. In the last issue of the Harper Hospital Bulletin we read the following:

"Other than referring to the directory of the American Medical Association, there are no means available to the public, in selecting a physician or surgeon, other than asking your friend or neighbor." In another part of this Bulletin, a framed advertisement, appears and is placed here as a suggestion that it be used in the daily papers. "What objections have you to it and what suggestions have you to offer?"

The following is the wording of the suggested advertisement:

TO THE PUBLIC

> Remember that there are reputable Physicians and Surgeons thoroughly trained in their profession—whose skill covers all fields advertised by the Quack. Inquire about them at reputable hospitals.

This advertisement is neatled set up in ten-point display type and forms an, attractive make-up. It arrests attention and has a punch as well as a selling power, thus meeting the rules of advertising.

We believe that such an advertisement run in the papers of the state will accomplish great good and will defeat the type of quack ads that are published. Bring up the subject at your next meeting and place the advertisement in your local paper. There is no reason why our societies should not conduct such an educational series of advertisements for educational purposes.

THE ASPIRATION OF STEARATE OF ZINC IN INFANCY*

Since the recent report of Heiman and Aschner of the aspiration of stearate of zinc by infants it may not be amiss to remind the profession of the grave danger of the use of stearate of zinc in the nursery as a dusting powder. Since their report there have been several other accounts of similar fatalities. The question undoubtedly arises whether such a substitute for talcum powder should be permitted to be sold at all and if sold whether or not the container should not be modified to prevent such accidents.

Certainly it is incumbent upon the practitioner to warn parents and nurses of the urgent danger of leaving an open can of stearate of zinc near an infant.

The ease with which an infant may aspirate this powder is due primarily to the way in which the container is made. It is a cylindrical cal box which has large perforations in the lid, with a sliding cover, to permit the powder to flow freely. If by chance an infant gets this container near its face and shakes it, there occurs frequently a shower of a large mass of powder which the infant aspirates as it involuntarily takes a deep inspiration.

The trouble has a very sudden onset usually. Sometimes the infant is completely asphyxiated. Quite commonly the resultant effect is a fulminating broncho-pneumonia which lasts 2 to 3 weeks, which is characterized by a variable temperature, a very acute taxemia, and particularly by cyanosis. The usual treatment for broncho-pneumonia is indicated.

Of the twelve cases reported by Heiman and Aschner, one died in 24 hours after the onset. Three others were quite ill with broncho-pneumonia, but recovered. The remainder recovered without definite involvement of the lungs. This gives a mortality rate for this small series of cases of approximately 8 per cent.

We fully agree that the stearate of zinc container as now made for use in the nursery is a distinct menace to the health of infants. Public health officials should be made acquainted with the dangers and appropriate warnings be issued to societies and organizations interested in infant welfare. And may we not urge

*The Aspiration of Stearate of Zinc in Infancy, Am. Jour. Dis. of Children, Vol. 23, No. 6, June, 1922 Henry Heiman and Paul Aschner.

particularly that the practitioner remember to warn parents of the dangers as a part of his work in the conservation of infant health, a small but not inconsequential part of modern preventive medicine?

Health officials may possibly by urgent representations to the manufacturers induce them to modify the type of their containers. The co-operation of the manufacturers would in the main obviate the necessity of resorting to public action and propaganda.

H. T. C.

THE UNIVERSITY HOSPITAL TRAINING SCHOOL FOR NURSES

Last month we imparted information revealing a proposed plan for the creation of a special training school for nurses in connection with the University Hospital. That the establishment of such a school will be detrimental to the interests of the profession is held by a goodly number of our members. These members and your officers believe that before such a scheme is "put over" a full open discussion of the plan should be engaged in and the ends sought by the proponents fully explained.

In this issue there will be found the call for such a conference which will be held in Ann Arbor on September 20 at 2:00 P. M. The State Society will be represented by the Council and the committees on Legislation and Civic and Industrial Relations. Steps will be taken to place the profession's views and recommendations before the Board of Regents.

For the further information of our members we are publishing extracts from the Rockefeller Foundation's Committee report to reveal that which is being sought. President Dodge will appreciate receiving the views and opinions of our members in regard to this plan. Write and tell him whether you are in favor of or opposed to this scheme.

The committee which presents the following report was first appointed by the Rockefeller Foundation in January, 1919, to conduct a study of "the proper training of public health nurses."

It was, therefore, the pressing need for more, and and for better, nurses in the field of public health that first suggested the desirability of such an investigation. It soon became clear, however, that the entire problem of nursing and of nursing education, relating to the care of the sick as well as to the prevention of disease, formed one essential whole and must be so considered if sound conclusions were to be attained. A year later, in February, 1920, the Foundation requested us to broaden the scope of our inquiry to include "a study of general nursing education, with a view to developing a program for further study and for recommendation of further procedure." We have attempted, therefore, to survey the entire field occupied by the nurse and other workers of related type; to form a conception of the tasks to be performed and the qualifications necessary for their execution; and on the basis of such a study of function to establish sound minimum educational standards for each type of nursing service for which there appears to be a vital social need.

THE ROLE OF THE NURSE IN PUBLIC HEALTH

Since it was the obvious need for more adequate nursing service in the field of public health which brought to a head the demand for a comprehensive study of nursing education, long-felt and first voiced by the official organization of nurses, it seems natural to begin with a consideration of this phase of the broader problem.

It is obvious that the public health movement has passed far beyond its earlier objectives of community sanitation and the control of the contact-borne diseases by isolation and the use of sera and vaccines. Major health problems of the present day, such as the control of infant mortality and tuberculosis, can be solved only through personal hygiene—an alteration in the daily habits of the individual—and through the establishment of new contacts with the public—contacts which shall permit the application of the resources of medical science at a stage in disease when they can produce a maximum effect. Such changes in the daily habits of the people and in their relation to their medical advisors, can be accomplished by but one means—education. In its present phase of emphasis on personal hygiene, the public health movement has thus become during the past two decades preeminently a campaign of popular education.

The new educational objectives of the health administrator may be approached to a limited extent by mass methods. The printed page, the public lecture, the exhibit, the cinematograph, the radiogram, help to prepare the ground and to make success easier. The ultimate victory over ignorance is, however, rarely attained in such ways. Direct personal contact with the conditions of the individual life is essential to success in a matter so truly personal as hygiene. We have sought during the past twenty years for a missionary to carry the message of health into each individual home; and in America we have found this messenger of health in the public health nurse. In order to meet generally accepted standards we should have approximately 50,000 public health nurses to serve the population of the United States—as against 11,000 now in the field. All public health authorities will probably agree that the need for nurses is the largest outstanding problem before the health administrator of the present day.

In view of this fact, public health authorities, both in this country and abroad, have naturally considered the possibility of finding a short way out of their difficulties by the employment of women trained in some less vigorous fashion than that involved in the education of the nurse. It was, therefore, to the question of the necessary and desirable equipment of the teacher of hygiene in the home that we first directed our attention. There are at present two distinct types of public health nursing practice in the United States—that in which the nurse confines herself to the teaching of hygiene, and that in which such instructive work is combined with the actual care of the sick. A third type of visiting nursing, in which bedside care is given with no educational service, may be observed in individual instances. It results, however, from temporary limitations rather than considered policy, since practically all visiting nurse associations, in theory at least, stress hygienic education in their official program.

The question whether the public health nurse should or should not also render bedside care has been hotly debated during the past few years. The

arguments for purely instructive service rest mainly on two grounds, the administrative difficulties involved in the conduct of private sick nursing by official health agencies and the danger that the urgent demands of sick nursing may lead to the neglect of preventive educational measures which are of more basic and fundamental significance. Both of these objections are real and important ones. Yet the observations made in the course of our survey indicate that both may perhaps ultimately be overcome. Several municipal health departments have definitely undertaken to provide organized nursing service for bedside care combined with health teaching, while in other instances instructive nurses, under public auspices, combine a certain amount of emergency service with their fundamentally educational activities. So far as the neglect of instructive work is concerned it results from numerical inadequacy of personnel and can be avoided by a sufficiently large nursing staff.

On the other hand the plan of instructive nursing divorced from bedside care suffers from defects which if less obvious than those mentioned above are in reality more serious, because they are inherent in the very plan itself and therefore not subject to control. In the first place the introduction of the instructive, but non-nursing field worker creates at once a duplication of effort, since there must be a nurse from some other agency employed in the same district to give bedside care. In the second place the field worker who attempts health education without giving nursing care is by that very fact cut off from the contact which gives the instructive bedside nurse her most important psychological asset. The nurse who approaches a family where sickness exists, and renders direct technical service in mitigating the burden of that sickness, has an overwhelming advantage, then and thereafter, in teaching the lessons of hygiene. With an adequate number of nurses per unit of population, we believe that the combined service of teaching and nursing will yield the largest results. Nurses employed by state health departments and others whose work is largely stimulative and supervisory in nature may not, of course, be in position to render direct bedside care.

There are other messengers who may be sent into the field to fulfill other functions. The task of the trained social worker for example is to diagnosticate and repair maladjustments in social relationships, a correlated, but quite distinct vocational field. Even public health agencies may employ other field workers of an allied type, such as clinic messengers. It is obvious, however, that where health instruction is combined with bedside care the fully trained nurse is the only possible type of health educator; and such a combination represents the one type of service which it is feasible to supply in rural districts. Even purely instructive work, if conducted on the generalized district plan, calls for an ability to detect the early signs of contagious disease, to discern symptoms which suggest tuberculosis, to give counsel as to infant care or the feeding of older children, which can scarcely be attained without a wide training. The relative lack of nursing personal in Europe has there led to the attempt to train health visitors of the purely instructive type for dealing with special individual problems, such as tuberculosis or child welfare, by training courses much shorter than those required for the preparation of the nurse. Opinion as to the result of such experiments in Europe varies widely; but for conditions as they exist in the United States we are convinced that the teacher of hygiene in the home should be equipped with no less rigorous training than that accorded to the bedside nurse, further supplemented by special studies along the lines of public health and social services.

Such a nurse establishes herself in the confidence of her community, so that she becomes its trusted advisor and best friend, caring for the sick, securing medical aid, counselling as to hygiene, resolving diffculties of a hundred sorts with the touch of a practiced hand.

Nearly half of the nurses observed in our survey were classed as definitely successful in their work and less than one-fourth as definitely unsuccessful—a showing perhaps better than would be made by a random sampling of most professions. Yet it remains true that either from a lack of knowledge of preventive measures or of teaching methods, a substantial proportion of public health nurses do fail to realize the possibilities of their profession. Administrative policies, overloading and inadequate supervision, are sometimes at the root of the trouble; yet it is obvious that such a calling as public health nursing demands in the first place a high degree of natural capacity and in the second place a sound and a broad education.

We are convinced, therefore, that the teacher of hygiene in the home should possess in the first place the fundamental education of the nurse and that this should be supplemented by a graduate course in the special problems of public health. The latter point will be discussed in detail in a succeeding paragraph, but we believe that the general considerations so far discussed warrant the following conclusion:

Conclusion 1. That, since constructive health work and health teaching in families is best done by persons:

(a) capable of giving general health instruction, as distinguished from instruction in any one specialty; and

(b) capable of rendering bedside care at need,

the agent responsible for such constructive health work and health teaching in families should have completed the nurses' training. There will, of course, be need for the employment, in addition to the public health nurse, of other types of experts such as nutrition workers, occupational therapists, and the like.

That as soon as may be practicable, all agencies, public or private, employing public health nurses, should require as a pre-requisite for employment the basic hospital training, followed by a post-graduate course, including both class work and field work, in public health nursing.

THE NEED OF NURSES OF HIGH GRADE IN HOSPITAL SUPERVISION AND NURSING EDUCATION

Before considering the basic demand for nurses to function in the routine care of the sick, we must point out that it is by no means only in the field of public health nursing, that the need for women of high natural qualifications and fundamental training is now manifest. The modern hospital and the modern dispensary represent social forces of enormous and growing magnitude. The technical complexity of their operation increases with every passing year; and, aside from the problem of the staff nurses required for the ordinary routine of such institutions, which will be discussed in a succeeding paragraph, there is perhaps no more urgent problem for the hospital administrator than that of obtaining nursing superintendents and supervisors adequate for the performance of their difficult tasks. The development, both of public health nursing and of administrative hospital nursing, involves and demands a corresponding development in nursing education which constitutes another inviting field for women.

The defective preparation and qualifications of many instructors in schools of nursing, in both

theoretical and practical branches, is very marked. Yet in the training school the instructor is often called upon to teach six or eight different subjects, far more than would be demanded even of the teacher in a country high school. It should be noted, however, that the appointment of any full-time instructors is a very recent development, and has marked a signal educational advance.

With the development of nursing education which we visualize in the future, and particularly with the growth of University Schools of Nursing, to be discussed in a succeeding paragraph, the field for well-qualified teachers of nursing should prove an increasingly attractive one. We believe we may safely advance as

Conclusion 2. That the cereer open to young-women of high capacity, in public health nursing or in hospital supervision and nursing education, is one of the most attractive fields now open, in its promise of professional success and of rewarding public service; and that every effort should be made to attract such women into this field.

Conclusion 3. That for the care of persons suffering from serious and acute disease, the safety of the patient, and the responsibility of the medical and nursing professions, demand the maintenance of the standards of educational attainment now generally accepted by the best sentiment of both professions and embodied in the legislation of the more progressive states; and that any attempt to lower these standards would be fraught with real danger to the public.

The solution of the economic problem which confronts the family of low income must probably be sought along the lines of cost distribution through some form of community organization. or along the lines of group insurance such as that being experimentally tested in New York city.

Conclusion 4. That steps should be taken through state legislation for the definition and licensure of a subsidiary grade of nursing service, the subsidiary type of worker to serve under practicing physicians in the care of mild and chronic illness, and concalescence, and possibly to assist under the direction of the trained nurse in certain phases of hospital and visiting nursing.

The foregoing paragraphs present, we are aware, a somewhat gloomy picture. In presenting them, we would emphasize two points which are of major importance. In the first place, such shortcomings as have been pointed out are not fairly chargeable to deliberate neglect on the part of hospital authorities or nursing superintendents. In so far as they exist, they are due to the inherent difficulty of adjusting the conflicting claims of hospital management and nursing education, under a system in which nursing education is provided with no independent financial endowment for its specific ends. The difficulties involved in the task of resolving this conflict are perhaps illustrated by the fact that out of 144 registered training schools in New York state, 60 changed superintendents during a single recent year.

Conclusion 5. That, while training schools for nurses have made remarkable progress, and while the best schools of today in many respects reach a high level of educational attainment, the average hospital training school is not organized on such a basis as to conform to the standards accepted in other educational fields; that the instruction in such schools is frequently casual and uncorrelated; that the educational needs and the health and strength of students are frequently sacrificed to practical hospital exigencies; that such shortcomings are primarily due to the lack of independent endowments for nursing education; that existing educational facilities are on the whole in the majority of schools inadequate for the preparation of the high grade of nurses required for the care of serious illness, and for service in the fields of public health nursing and nursing education, and that one of the chief reasons for the lack of sufficient recruits, of a high type, to meet such needs lies precisely in the fact that the average hospital training school does not offer a sufficiently attractive avenue of entrance to this field.

Conclusion 7. Superintendents, supervisors, instructors and public health nurses should in all cases receive special additional training beyond the basic nursing course.

THE UNIVERSITY SCHOOL OF NURSING

For advanced training the development of the University School of Nursing has been perhaps the most notable feature in the progress of nursing education during the past ten years. As long ago as 1899 teachers college in Columbia University admitted properly qualified nurses to its junior class, thus giving two years of college credit for the three years of nursing training. Since 1916, no less than thirteen different colleges and universities have provided combined courses, through which students may acquire both a nurse's training and a college degree.

The combined course in such a school, for example, involves two years of ordinary college work including besides work of a liberal nature certain of the fundamental sciences basic in nursing education. Then follows two years of intensive training in the hospital and, finally, a fifth year of post-graduate education in one of the higher specialties of nursing, public health, institutional supervision or nursing education. At the close of training, the student receives a diploma in nursing and the bachelor's degree in nursing or in science.

This type of school of nursing should, in the judgment of the committee, be a separate and independent department of the university, cognate in rank and organization with the school of medicine, or the school of law. It should have direct responsibility for all instruction given during the years of hospital training and the post-graduate nursing year.

A definite affiliation with one or more hospitals must in any case be established, along the line of these agreements now in force between medical schools and hospitals. The school supplies student nursing service and assumes a definite responsibility for a larger or smaller share of ward supervision and perhaps of graduate service. The hospital, on the other hand, provides maintenance for the nursing staff and conforms to the standards held by the university to be essential for the realization of its educational ideals. A university hospital will of course offer the most promising field for a University School of Nursing, but in default of such an institution there seems no reason why a university school should not establish satisfactory working agreements with various adjacent hospitals, provided only that the maintenance of adequate standards in the practice field remains in its own hands.

If its present practical functions be clearly understood, the University School of Nursing possesses unique advantages in respect to both of the essentials for success in nursing education, to which reference has been made in a preceding paragraph. It possesses the power of independent educational leadership and is grounded on the solid foundations of educational ideals, to a degree which a training school committee, untimately responsible to board of hospital trustees, can seldom hope to realize; and it is likely to obtain financial resources of a more nearly adequate extent. Furthermore, through its university contacts the University School of Nursing has unique opportunities to attract students of

the type so greatly needed for the fulfillment of the higher tasks in the nursing of the future.

It should be made quite clear that the committee does not recommend that nursing schools in general should work toward the establishment of courses of a character that a university would accept for a degree. We realize that the numerical proportion of the nursing profession to be contributed by the University school will perhaps always be a relatively small one. Yet we believe that the importance of this portion of the educational structure would be difficult to overestimate. The value that we see at present in the University schools is that they will furnish a body of leaders who have the fundamental training essential in administrators, teachers, and the like. One of the greatest, if not the greatest of the reasons for the imperfections in the persent training of private duty nurses is that great numbers of schools have developed without any co-incident development of adequate numbers of persons properly trained to guide the pupils during their course. Unless well taught they cannot be well trained. The University School of Nursing should be the keystone of the entire arch. It will not only train leaders and develop and standardize procedures for all other schools, it will, by its permeating influence, give inspiration and balance to the movement as a whole and gradually, but steadily improve the efficiency of every institution for the training of nurses of whatever type. We would therefore urge as

Conclusion 8. That the development and strengthening of University Schools of Nursing of a high grade for the training of leaders is of fundamental importance in the furtherance of nursing education.

Conclusion 9. That when the licensure of a subsidiary grade of nursing service is provided for, the establishment of training courses in preparation for such service is highly desirable; that such courses should be conducted in special hospitals, in small unaffiliated general hospitals or in separate sections of hospitals where nurses are also trained; and that the course should be of eight or nine months duration, provided the standards of such schools be approved by the same educational board which governs nursing training schools.

Editorial Comments

A million dollars would earn about $50,000 per year. That is the amount that medical profession was to be sold out for. Well it can't be done for that.

We have never heard of any endowment given by the Rockefeller Institute that did not have some sort of a string tied to it. Of course the terms of this proposed endowment has not been imparted so we cannot impart the joker.

The Joint Committee on Public Health Education will hold its next meeting in October. At that meeting there will be formulated a new Bulletin imparting the topics that will be covered by the speakers that have been nominated by county societies.

We cannot possibly percieve how it would be possible to have two independent professions supervise, direct and administer to the needs of the patients in a hospital. Time and experience has shown that such a plan would be most fool-hardy to express it mildly.

We understand that the self-appointed leaders from the nursing profession, during a discussion of the plan have stated—"We are not going to take orders from the doctors," and "henceforth we will perform our nursing service under our own direction and not under the direction of a doctor."

At the request of the State Association of Rotary Clubs, President Dodge has appointed a special committee composed of Drs. A. L. LaFerte, LeRoy Abbott and John T. Dodgen to consult with a committee from the Rotary Club concerning the care of crippled children of the state. It is hoped that a satisfactory plan will be formulated to provide orthopedic care for these children.

We want you, Doctor, to ponder over this project and plan that they are trying to put over on you. How will it affect you? Are you going to sit idly by or are you going to voice your opinions and demand that your personal rights shall not be infringed upon? Right now, and not next fall, is the time to act and to secure action by your county society.

Will the nursing schools and their leaders relegate to the dumpheap the Florence Nightengale Oath of Service? Seems to us that that oath, which is customarily administered to graduating nurses, contains a reference to allegiance to the doctor and to a life of service. Or, will a new, revised oath be formulated? Have these Nurse Leaders forgotten that provision of the oath that they subscribed to?

Sometime ago a conference was held with representatives of the Western Reserve University in Cleveland regarding a similar proposed Nurse School. Dr. Crile suggested that these student nurses be kept in school the rest of their lives because they would be good for nothing anyway after they were graduated from the school. What is needed is more practical trained nurses and not super-educated nurses.

If you know any of the regents write to them and place before them your protests to this plan. If you do not know any of them, write to them anyway and let them know that the medical profession is emphatically opposed to such a plan of socialism. Further, request that the management and direction of the University Hospital be placed under the direction of the Medical Faculty and that the hospital director and superintendent shall report to the dean of the medical school.

As we understand it, from the information that has been imparted, it is at the suggestion and recommendation of the director of the University hospital, Dr. C. G. Parnall, that this proposed new

Training School for Nurses and the education of a new type of nurse be established. Our information is that the Medical Faculty of the University and the medical staff of the hospital, with but two exceptions, went on record as opposed to the plan. The dean of the medical school, Dr. Cabot, has placed before President Burton and the Regents the Faculty's objection to the plan.

Talk about Socialized Medicine, State Medicine, Health Insurance, why this proposed plan contains more damaging and damnable principles and policies than any type of so-called State Medicine yet advanced. We cannot percieve why the director of the University Hospital did not come into the open and submit the plan to the medical profession of the state, obtain its opinion, ascertain its attitude and invite a general discussion before making so radical a recommendation and trying to secure its adoption. We understand he lacked but one vote in the Board of Regents to put it over.

It has always appeared to us and we believe the sentiment is somewhat general, that the management and nursing service of the University Hospital should be under the direct supervision of the Medical School and its faculty. The Hospital should not be separate and independent and report directly to the president and the regents, for they are without the proper knowledge as to what is needed for efficient, scientific administration. We trust that this incident will cause a change to be brought about that will remedy the at present unsatisfactory plan of administration.

From time to time we have been impressed by the valuable advice that Dr. Wm. Brady imparts to the public through his health columns that are syndicated to many local newspapers. He has done much for the education of the public in regard to health and disease. His advice merits our approval. Recently he advanced the following reply to an inquirer who wanted to know how to be governed in the selection of a physician. We are publishing it in this column in the hope that it will serve as an impetus for all our readers to meet the requirements laid down.

First, the name of the good doctor is rarely seen in print.

Second, in making examinations he requires the patient to remove clothing which may interfere with the detection of signs and symptoms.

Third, when he is out of town he is attending a medical meeting or taking a brief post-graduate course.

Fourth, he asks frequently for consultations or refers patients to colleagues for special examinations, and when his patients die asks for autopsies, all because he never gets through studying medicine. This is why he buys so many books and subscribes to so many first-class medical journals.

Fifth, he prescribes simple medicines to meet particular indications at the particular time, and not "ready-made" stuff with which he has recently been "sampled." Or, perhaps, he prescribes no medicine at all, but merely lays down some common-sense rules for the guidance of his patient.

Sixth, he never guarantees or promises a "cure," because to do so would be to be dishonest.

Seventh, he is invariably a stickler for the observance of the rules of ethics.

Eighth, being an honest laborer, he deems himself worthy of his hire and demands payment.

Ninth, he does not put a patient off with the evasion, "weak lungs," nor does he perpetrate the near diagnosis, "catarrh." He makes a definite diagnosis or frankly admits his inability to do so.

Tenth, "he will do anything short of murder for a loyal patient."

Deaths

Mrs. Jessie Van Meter Ballard, wife of Dr. Charles S. Ballard, formerly of Flint, died at her home, New Haven, Conn., after a three months' illness. Dr. and Mrs. Ballard had resided in Flint a number of years prior to 18 months ago, when they went to New Haven, where Dr. Ballard is engaged in public health service. In Flint Dr. Ballard was a practicing physician. Surviving are her husband, one son, and parents, Mr. and Mrs. E. W. Van Meter, 725 Oak street. The body was brought to Flint for interment.

State News Notes

COLLECTIONS

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

Absence on vacations accounts for non-receipt of news items from our correspondents.

C. S. Sligh has donated 15 acres of land, $350,000 for building and an endowment of one-half million for a new Children's Hospital in Grand Rapids.

Dr. W. T. Dodge of Big Rapids and Dr. F. C. Warnshuis of Grand Rapids are the invited speakers at the Louisville, Ky., Medical Society on Sept. 25th.

Dr. Alden H. Williams of Grand Rapids entertained the members of the Kent County Medical Society at his summer home at Highland Park on August 12.

Dr. Carl F. Snapp of Grand Rapids announces that he will return to Grand Rapids and limit his practice to oto-laryngology. The doctor was formerly Fellow in Oto-laryngology in the University of Chicago.

Flint school clinics will be established, ready to function at the beginning of the fall term of school, with full time and part time physicians and dentists in charge, provision and final arrangements having

been made at the monthly meeting of the board of education at the public library.

Dr. Lafon Jones will be superintendent of this new department of the public schools, having as his assistants in the dental department, Dr. W. R. Davis, who will be in charge of that branch. Dr. Meriel L. Dimick, and Dr. Fred Marsh and in the medical and surgical department, Dr. Nell Ward. The estimated cost of this feature is only $7,500 more than the board of education spent last year in the promotion of health in the schools, the cost of the permanent clinical equipment being included in that figure. Last year the board of education appropriated $5,000 to the board of health.

The board of education purposes particularly to do dental work and remove tonsils and adenoids, of those school children who could not otherwise have it done, according to the reports given at the meeting. Other cases will be taken care of as they present themselves. A thorough examination of the teeth of every pupil in the public schools will be made at the opening of school.

Dr. Davis will be employed half time, 12 months; Dr. Dimmick full time, 10 months; Dr. Marsh half time, 10 months, and Dr. Ward half time, 10 months.

Three clinics will be established, a permanent clinic at Oak Grove and temporary clinics in schools in other sections of the city. A suite of rooms in Partierre, a section in the Teachers club at Oak Grove, has been procured and will be fitted up for the permanent clinic.

Public school nurses will function under this department, Dr. Jones being in direct supervision.

As a further aid in health work in public schools, the board of education demands a certificate of health from each new employe.

Book Reviews

A TEXT-BOOK OF GYNECOLOGY. James Young, D. S. O., M. D., F. R. C. S. (Edin.) Assistant physician, Royal Maternity Hospital; Lecturer in Clinical Gynecology and Clinical Obstetrics, Edinburgh University; Late University Clinical Tutor in Surgery; Gynecologist Provident Dispensary, Edinburgh; Examiner, Central Midwives Board for Scotland, etc. Price $2.75. The MacMillan Company, Publisheds, New York.

The author and publishers feel that this definitive text is a distinct achievement in text-book publication in that this comprehensive subject has been adequately presented in compact form with copious illustrations at a more reasonable price to the student.

It is designed along new lines to provide a required text for classroom use in place of the large, expensive works which contain many specialties usually covered by the teacher's lectures.

Miscellaneous

BIG MEDICINE*

(Indian expression meaning "something more important or greater than the ordinary.")

To the Editor:

Less than a half hour since, I stood at a street corner and observed a number of men decorated with very large 'badges' announcing their purpose to visit the capitol and legislature, now in session. It is a reasonably safe bet that they will attain their object. Not because their cause is more worthy than many other causes, but because they are organized. When they bust upon the gaze of the patriots who make our laws, said patriots will think forward to next election, and then back to the present time. After these mental gymnastics, (well within the compass of the modern politician), an estimate of the situation will bid each and all of them to be 'with' the organized tribe of men who wear the badges, announcing their purpose, and who quit their work to come to enforce their ideas.

And as I watched the goodly crowd, I thought of my chosen vocation—wondering—if a bill were to be introduced into the legislature making it imperative to pay (let us make an hypothesis) $100.00 each year to practice medicine in the state of Illinois, how many doctors would leave their work to come and fight it.

One idea brought on another and another, until it dawned upon the writer that he might be arrested for what he thinks concerning the lack of organization of the medical profession. So, carefully expunging the astonishers and dashes, and pulling the stringers from some bad words of polysyllabic trend, I seat myself to hold up a mirror to his excellency the Doctor.

But first let me illustrate the gratitude of those (in general) who pat us upon the back and call us 'most unselfish.'

An old patient had held a very responsible position for twenty years. Men had been advanced over him; he taught the promoted ones their new duties, guided them with their work; aided them in searching out their mistakes; and his reward was ever the same. Occasionally the president of the concern would come over to his desk and with his presidential hand upon my old patient's shoulder, would say, 'We can always depend upon you. We never worry about you turning us down.'

Fine reward for faithful service! One day, my patient happened to be in bad humor, and when the speech was about to be delivered per routine, he arose and requested a little advancement upon his own account. And he set a time limit to his demand. The promotion did not come. He quit. Quit after twenty years of faithful service. He was not 'organized' but he awakened to the fact that he had been rather sadly handled. Unavailingly they tried to coax him back to his job.

In one week he had accepted another position (two were offered) paying him fifty dollars more per month, than he had ever before received. In fine, he dispensed with the pat upon the back and put gold into his poke. Now he owns his home and plays golf. Owns his golf sticks too.

In holding up the mirror to you, my dear brother doctor—no—let us wait and have you take a good look at yourself tonight when you return to your boudoir. Take good stock of yourself. See if it is not a fact that you have been pegging along upon

*From Medical Review of Reviews, July, 1922.

the comfort you have received from a pat upon your back and the words 'the most unselfish profession,' etc., ad nauseum.

In 1917 about forty thousand of us changed our street attire into well-fitting suits of olive drab, and took vacations from our regular work, for varying lengths of time (over 1½ years in my personal case). And what happened? The fellows who did not get into uniforms were doubly busy doing our work and their own; so all-fire ding-busted busy that they let the National Politicians raise the Harrison Ante to $3.00 a year in place of the $1.00 that went through with the law 'just to make it legal.' Now then, when they raise the ante 200% at one shot, and get by with it, it begins to look as if you were too busy at attend to your own welfare. And then what? Oh, nothing, nothing at all save the pending health legislation; to ape the ways of decadent foreign medicine, etc. (Compulsory Health Insurance).

By the way, my dear doctor, did you ever note the lawyers, (who comprise most of our law making bodies), endeavoring to establish a law that will give everybody all the legal advice and protection that they may think they need, for a stipulated (small) sum annually. The 'No's' have it. And you get yours between the 'I's' when the law makers go to work upon your privileges.

Look at yourself. Your head in a cloud and your feet in the mud; wondering with your head, how you will complete the college schooling of your offspring; and mucking around, with your feet not even seeking firm ground. Take a good look now and see if you are not proud of the image you see. The brains of a mental colossus and business ability that is (generally) less than that of the sixteen-year-old newsboy who has a business of his own by the time he arrives at voting age. You know exactly how to make a diagnosis of a hemorrhage into the posterior columns of Gaul, but I will wager a ten cent cigar (5c before the war), that you cannot tell a good oil stock certificate from a bad one.

The medical schools should devote a part of the time spent in learning, to a course in business—genuine business training.

An old 'con' man, a patient of mine for years, who always kept 'within the law,' once told me that if he ever went into the game again, he would work exclusively with the medical profession, as they were the easiest of all easy morks.

But medicine is a 'higher calling.' Sure; nice pat upon the back. 'More at stake than dollars and cents,' but it takes the dollars and cents to buy the steaks that put meat upon your bones. "Looked upon as a learned profession'—oh, yes, we admit all that twaddle. It is just such bunk that makes you wait for your bill against an estate (if you ever get it), until certain other claims are satisfied. The laboring man can take the clothes from off your back, to satisfy an unpaid claim, but you cannot even garnishee unless he makes more than a stipulated minimum sum per week.

In the name of all things holy, why is it that the physician should be a member of the 'professions,' while his house needs painting and his shoes half soling. Classify it in law as a 'trade,' and see if it is not possible to collect a great many bills that are outstanding nad not yet out-lawyed.

I am wondering how many readers of this little heart-to-heart talk have ever sat down and carefully analyzed the medical situation as it exists today. We can all remember the time when a 'paper' devoted to the commercial side of medical practice would have been 'boo-ed' off the platform, and yet today, we occasionally hear some courageous brother M. D. sounding the danger Klaxon to us. Do we listen? Not so as one could notice it. Do we 'organize?' Sure! For scientific purposes only. It would be unsuited that such a noble profession should prostitute its honor by organizing for sordid gain, or the protection of the monetary welfare of its members. Bosh, Brother, Bosh. Take your little verbal reward, and trot along home; if you expect to live and wear clothes and eat food, you had better get busy, and that, soon. Even sooner if possible.

Now then, you dreamer of dreams, who is paid for his sacrifices by laudatory words; what have you to say? Not a damn word, eh? I thought not.

When words buy beans; when enconiums purchase houses; when citations can be banked and checks drawn against them, will be the time that I agree with you in your aloofness to matters concerning 'sordid gold.' Until then, I'm for organization.

Why not show the good common sense of the plumbers, bakers, brick masons, printers, hatters—in fact of almost everybody but you.

"Petty jealousies would wreck the structure?" Don't you suppose that the carpenters and the steam fitters have their little internecine feuds? Do you suppose that the miners are without their intramural 'scraps.' But they stick together and when they decide to demand that which you have decided is their right, you, my dear brother, and I, and all of us, have to sit up and take notice.

Do not think that I am advocating an eight-hour day for doctors. That is too utopian for this day. But I should like to see a six-day week for the physician, with Sundays reserved for his pleasure and relaxation, except when interfered with my emergencies (which are mostly —) I would like to see him spend his nights in slumber instead of in a Ford. Three-fourths of all night calls are unnecessary, but in our unorganized fight for existence, if we do not bow humbly to the telephone bell or to the peremptory rap upon the door, the next and nearest doctor will get the call and the patient —because we are not organized.

Wait, just wait until they try out the "health insurance" idea and see how much leisure is yours. In England, many doctors must average about 20 patients daily to live. Could that state of affairs have come into being if the profession had been organized as are the miners or the plumbers? Of course, it could not.

The oldest of military rules are first, "never di-

vide your forces" and secondly, "try to separate the forces of the enemy." Are we undivided?

Unless the profession of medicine organizes; takes time to fight vicious legislation; and (literally) fathers laws to further its own welfare, the future of medicine in the United States is far from a dream of bliss.

In Chicago, Ill., the insurance companies (organized) became so arrogant, that when bills were rendered by doctors who had not subscribed to their fee schedule, they not only did not pay, but threatened the presumptious doctor with a well-regulated boycott. Finally, the society of Chicago physicians awakened and organized to such extent that the roaring lions of insurance avocation, became like suckling doves, and came to partake of the grain that was tendered them instead of the quivering flesh that they had expected.

Organization did it.

Organization will do much for us. But the chain will only be so strong as its weakest link. When a link breaks it must be very carefully mended or cast aside. In the "unions" they fine the culprit, as a warning. One fine is usually sufficient.

And only recently, there appeared in the state of West Birginia, armed forces, who were willing to battle to enforce their ideas of right and justice.

Imagine physicians doing that. Incredible, isn't it?

But, there is another side to the argument. We are told by thinking persons that "state medicine" is upon its way and is bound to come. We have the horrible example of what it has done for medicine, from our brethren in Europe. History has a habit of repeating itself, so we may expect the same infamous results here. How may we avoid it? Simple as you please. Strange you have not thought of it before.

Just discourage your offspring from the study of medicine; discourage others; tell them the truth as concerns the future in medicine; then in a quarter of a century, the broad vested legislators who are ever philanthropic so long as their own welfare is not concerned, will realize what their damnable meddling has accomplished.

Study it over. Is the medical outlook at all brilliant? The "noes" have it.

My son soon enters upon his first collegiate year. He wanted to be a doctor, until I explained to him.

Now then, brothers, I have done my part—it is up to you to do yours.

"If this be treason, make the most of it."

In closing this sermon whose purport is to beg that you begin to start to commence to prepare to "organize" I cast about for a "climax" that with a warp of fire and a woof of flame, would burn an irreparable hole into your thinking apparatus, and would make you remember.

Providence placed in my hands the clipping that is quoted verbatim below. I can think of no better ending for this appeal for "life" liberty and the pursuit of happiness' than from The Medical Pocket Quarterly.

WHY?

Why does a lawyer get $10—without moving from his seat—for making out a lease that any trained stenographer can fill out in ten minutes, while a physician gets only $1 to $3 for diagnosing and prescribing for a patient's ills, the correction of which will keep him fit to earn thousands?

Why does a mechanical engineer get $50 to $250 for looking over a plant and telling a manufacturer where to place machinery so as to get out of it maximum efficiency, and a physician gets 1-25 to 1-125 that sum for looking over a man and telling him how to get the maximum efficiency out of himself.

Why are attorneys able to collect their fees usually in advance and doctors two months to a year after service is rendered, if they ever get them at all?

Why do doctors give away $100,000,000 worth of free service a year in hospitals, clinics, home office treatment, while other men give away nothing?

Why are butchers, bakers, grocers and milkmen without education, many hardly able to read or write, able to earn more money than thousands of physicians with education?

Why do legislatures concede to lawyers practically every request they make for laws increasing the emoluments and safeguarding the interest of their profession and refuse practically all requests for increasing the emoluments and protecting the interest of physicians engaged in public health work and otherwise?

Why do doctors have to work 1 to 18 hours a day, seven days a week, to earn the monetary rewards of mechanics and other lay workers, working only 8 hours a day, five days a week and half a day Saturday, with all holidays off?

Why is it that a doctor making a honest mistake in the treatment of a patient is sued for malpractice and often mulcted in heavy damages, while a lawyer making the same honest mistake in the trial and handling of a client's case is never sued and never obliged to pay a cent of damages?

Why is it that we have to pay larger premiums for indemnity insurance than rum sellers, manufacturers employing workers at hazardous tasks, and almost every other type of risk?

Because we are considered the softest and easiest class on earth on which to impose and the value of the service we render the world the least appreciated.

Isn't it time we woke up and got on our toes—time we became more aggressive for our rights?

FRED S. O'HARA, M. D.

Springfield, Ill.

THE JOURNAL
IS
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WE INVITE YOU
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ON
MEDICAL SUBJECTS